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HILDA User Manual – Release 14

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Updates to This Manual

Date	Update
22/07/16	Correction to numbers for Wave 14 in Table 8.27
15/04/16	Correction to variable names in Table 4.27
17/03/16	Correction to footnote 8, correction to Figure 4.9 (Wealth Model)
29/11/15	Updated Manual for Release 14
27/11/14	Updated Manual for Release 13
04/12/13	Updated Manual for Release 12
05/12/12	Updated Manual for Release 11
25/11/11	Updated Manual for Release 10
06/12/10	Updated Manual for Release 9

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1 USING THIS MANUAL

The Household, Income and Labour Dynamics in Australia (HILDA) Survey is a household-based longitudinal survey. This manual has been designed for the users of the HILDA Survey data.

The manual aims to cover the things that you need to know to use the HILDA Survey data – such as missing data conventions, an introduction to the derived variables, how to put the data files together, imputation, weights and how to find your way around the documentation.

The best way to use this manual is as a reference tool. It is unlikely that you will sit down and read it cover to cover and take away everything you need to know about the data. More realistically, you will start to work with the data and will need some information about certain aspects of the data or the survey – and hopefully you will be able to find it within this manual fairly easily.

We welcome any feedback you have on this manual. It will be updated as successive waves are made available to researchers and we are happy to hear how it could be improved. If there is something that you expected to find in the manual and didn't, or if you had difficulty finding or understanding any section, please let us know (email hilda-inquiries@unimelb.edu.au).

2 OVERVIEW OF THE HILDA SURVEY

The HILDA Survey is a broad social and economic longitudinal survey, with particular attention paid to family and household formation, income and work. As the HILDA Survey has a longitudinal design, most questions are repeated each year. Nevertheless, within each survey wave, scope exists for asking questions on topics that will not be covered every year. The major modules included in the HILDA Survey are listed in Table 2.1.

Table 2.1: Actual and proposed rotating content of the HILDA questionnaire

	Wave														
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Wealth	X				X				X				X		
Fertility and Family				X			X			X				X	
Intentions and plans				X			X			X					
Retirement		X				X				X				X	
Non co-residential partners				X			X			X				X	
Health								X				X			
Health insurance			X					X				X			
Diet						X		X				X			
Human Capital											X				X
Literacy and numeracy						X					X				X
Non-co-residential parents and siblings							X				X				X
Youth			X												

2.1 The HILDA Sample and Following Rules: A Summary

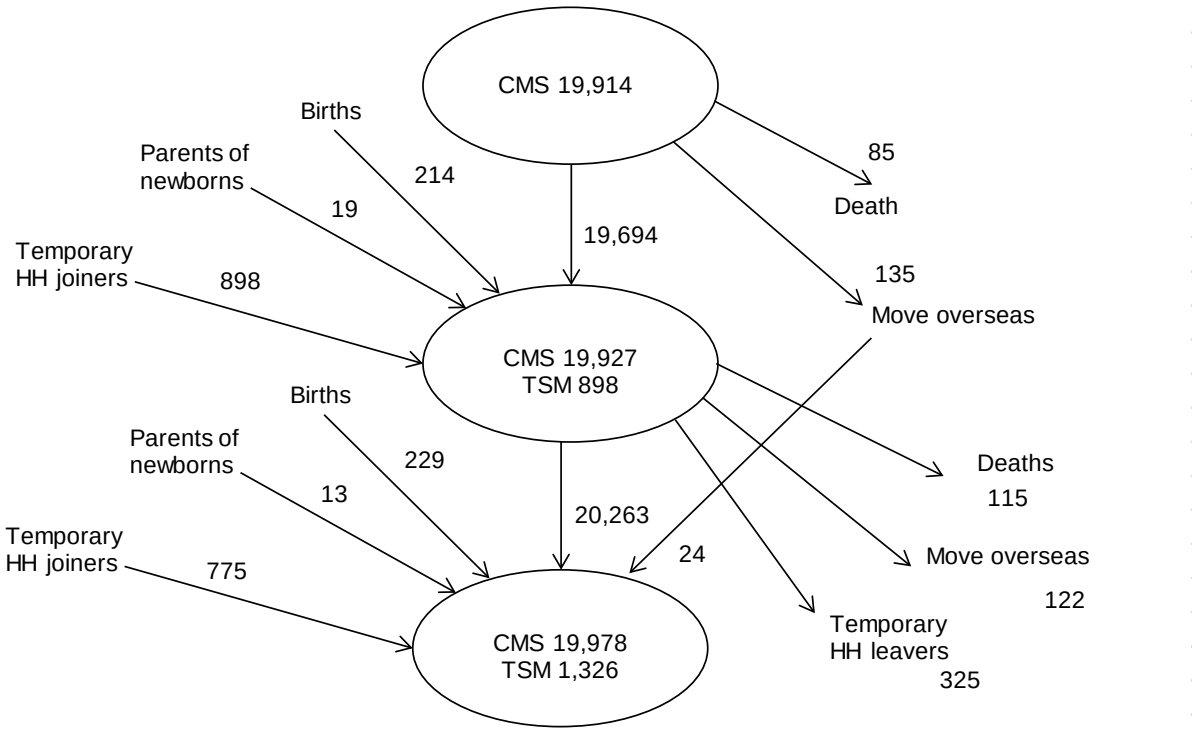
The HILDA Survey began with a large national probability sample of Australian households occupying private dwellings. All members of the households providing at least one interview in wave 1 form the basis of the panel to be pursued in each subsequent wave. The sample has been gradually extended to include any new household members resulting from changes in the composition of the original households. From wave 9, new household members that arrived in Australia for the first time after 2001 were also added to the sample.

The sample was replenished in Wave 11 with an additional 2,153 households added. The following rules for the Top-Up sample are the same except recent arrivals are defined as arriving in Australia for the first time after 2011.

Continuing Sample Members (CSMs) are defined to include all members of wave 1 households. Any children subsequently born to or adopted by CSMs are also classified as CSMs. Further, all new entrants to a household who have a child with a CSM are converted to CSM status. CSMs remain in the sample indefinitely. All other people who share a household with a CSM in wave 2 or later are considered Temporary Sample Members (TSMs). TSMs are followed for as long as they share a household with a CSM. The variable *hhsm* on the master file identifies TSMs while the CSMs are split into two groups: OSMs (original sample members from wave 1) and OPMs (other permanent sample members, i.e. 'new' CSMs).

Figure 2.1 shows an example of how the sample evolved across the first three waves. In wave 1, the sample consisted of 19,914 people. A further 443 births and 32 parents of newborns who were not originally CSMs have been added to the sample in waves 2 and 3. A total of 200 deaths have been identified across the two follow-up waves and 257 people have moved overseas, though 24 returned after being away for one wave. Of the TSMs joining the sample in wave 2, a third had moved out by wave 3.

Figure 2.1: The evolution of the HILDA Survey sample across the first three waves



Note: 22 TSMs from W2 were a parent of s a CSM birth in W3 so became a CSM in W3 themselves.

2.2 Questionnaires

In wave 1, the HILDA Survey comprised four different instruments. These were:

- the Household Form (HF);
- the Household Questionnaire (HQ);
- the Person Questionnaire (PQ); and
- the Self-Completion Questionnaire (SCQ).

In subsequent waves, the PQ was replaced with two instruments:

- the Continuing Person Questionnaire (CPQ), for people who have been interviewed in a previous wave, and
- the New Person Questionnaire (NPQ), for people who have never been interviewed before (which collects family background and personal history information along with the regular content).

In Wave 11 two additional forms were used for the Top-Up sample:

- the Top-Up household form (TU-HF). This form included additional questions from the wave 1 HF (how well speaks English, external characteristics of the dwelling); and
- the Top-Up new person questionnaire (TU-NPQ).This form did not include the employment or education calendar or the wave 11 special topic PQ modules on “retirement” and “intentions and plans”. New sample members were not asked any modular content until their second interview (this was the approach with the wave 1 sample).

Appendix 1a provides a guide to topics covered in the HILDA Survey across the waves. Appendix 1b provides a list of sources used in constructing survey questions.

The questionnaires can be downloaded from the HILDA website: http://www.melbourneinstitute.com/hilda/doc/questionnaires/default.html or you can view the questionnaires provided with the data files which have been marked up with the associated variable names (see Section 5.2 on Marked-Up Questionnaires).

2.2.1 Household Form

The HF is designed to record basic information about the composition of the household immediately after making contact. The HF is the ‘master document’ used by interviewers to decide who to interview, how to treat joiners and leavers of the household, and to record call information and non-interview reasons. The date the HF is completed is provided in *_hhcomps*. The number of interviews completed in the household is given in *_hhivws*.

2.2.2 Household Questionnaire

The HQ collects information about the household rather than about individual household members per se, and is only administered to one member of the household. In practice, however, interviewers are encouraged to be flexible. If more

than one household member wishes to be present at the interview this is perfectly acceptable. Further, interviewers are given the flexibility to deliver part of this interview to one household member and part to another. Indeed, this was often required, with questions on child care needing to be asked of the primary care giver. The date the HQ is completed is provided in *_hhhqivw*.

The HQ mainly covers child care arrangements, housing, household spending (until wave 5) and, when the rotating wealth module is asked (every 4 years from wave 2), household wealth.

2.2.3 Person Questionnaires

The PQs are administered to every member of the household aged 15 years and over. The CPQ is for people who have ever been interviewed before and the NPQ is for those who have never been interviewed before. Parental consent is sought before interviewing persons aged under 18 years who are still living with their parents. *_hhpq* states which type of interview was applicable and *_hgwsli* indicates how many weeks have elapsed since the respondent's last interview (if they are completing a CPQ). The date the PQ is completed is provided in *_hhidate.*

The sections of the person questionnaires are shown in Table 2.2 together with the letter used to identify the section. These will help you locate questions on the questionnaires (for example, if you wanted to find questions on education, look in section C of the wave 1 Person Questionnaire and section A of the Continuing Person Questionnaire and New Person Questionnaire from wave 2 onwards).

The PQ in wave 1 is distinctive from that used in the later waves as it collected biographical data that only needs to be asked once. These questions are spread throughout the survey and include questions about country of birth and language, family background, educational attainment, employment history, and marital history. In addition, at later waves further biographical information about visa category for immigrants (wave 4) and parents' education (wave 5) was collected.

The NPQ differs from the CPQ in the inclusion of these additional biographical history questions.

Table 2.2: Sections of the Person Questionnaires

Topics	*Section*	
	Wave 2 onwards	*Wave 1*
Country of birth	AA (NPQ only, except in wave 4[1])	A
Family background	BB (NPQ only)	B
Education	A	C
Employment status	B	D
Current employment	C	E
Persons not in paid employment	D	D, F
Annual activity calendar	E	FG
Income	F	G
Family formation	G	H
Partnering/relationships	H	J
Health, life satisfaction, moving	K	K
Tracking information	T	T
Interviewer observations	Z	Z
Special Topics		
Wealth (wave 2, 6,10 and 14)	J	
Retirement (wave 3 ,7 and 11)	L	
Private health insurance (wave 4 only)	J	
Youth issues (wave 4 only)	L	
Fertility and partnering (wave 5, 8 and 11)	G, H	
Intentions and Plans (wave 5, 8 and 11)	L	
Human Capital (wave 12 only)	N	
Literacy and Numeracy (wave 12 only)	N	

1.Immigration Status asked in wave 4 in section AA

2.2.4 Self-Completion Questionnaire

Finally, all persons completing a person questionnaire are asked to complete a Self-Completion Questionnaire which the interviewer collects at a later date, or failing that, is returned by mail. This questionnaire comprises mainly attitudinal questions, many of which cover topics which respondents may feel slightly uncomfortable answering in a face-to-face interview. The date that the SCQ is completed is not

collected for waves 1 to 8 but is included from wave 9 (_*scdate*). The variable _ *scmatch* indicates whether an SCQ has been matched to the PQ. Table 2.3 shows the sections of the SCQ together with the letter used to identify the section.

Table 2.3: Sections of the Self-Completion Questionnaire

Topics	*Wave 1*	*Wave 5, 8 and 11*	*Other waves*
General health and well-being (SF-36)	A	A	A
Lifestyle and living situation	B	B	B
Personal and household finances	C	C	C
Attitudes and values	D	D	-
Job and workplace issues	E	E	D
Parenting	F	F	E
Sex and age	-	G	F

3 THE HILDA DATA

The HILDA Survey has already developed a sizeable community of users. Table 3.1 and Table 3.2 show the total number of individuals who have been approved access to at least one of the data releases and the composition of our user community. There are also 120 users of the HILDA-Cross-National Equivalent File (HILDA-CNEF).

Table 3.1: Total number of HILDA data users, Release 1 to 13

Release	*Total data orders*	*Orders by new users*	*Cumulative no. of users*
Release 1	204	204	204
Release 2	266	170	374
Release 3	280	158	532
Release 4	330	177	709
Release 5	388	197	906
Release 6	401	176	1,082
Release 7	455	200	1,282
Release 8	432	126	1,408
Release 9	501	144	1,552
Release 10	538	184	1,736
Release 11	534	210	1,946
Release 12	567	199	2,145
Release 13	657	351	2,496

Table 3.2: HILDA data users by type, Release 1 to 13

	Release												
Type of user	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
Academic – Australia	84	113	127	143	170	178	206	199	241	259	261	290	269
Academic – Overseas	5	15	18	19	24	25	37	24	54	66	54	62	88
Students – Honours year	3	13	16	15	13	7	13	17	13	22	36	20	20
Students – Postgraduate	9	16	18	31	42	41	40	44	60	66	72	77	87
Government – Australian	87	87	82	103	120	134	137	122	111	116	102	101	124
Government – State/Local	8	14	8	11	8	5	10	5	8	8	8	6	15
Other	8	8	11	8	11	11	12	21	14	1	1	11	54
Total	204	266	280	330	388	401	455	432	501	538	534	567	659

3.1 Ordering the Data

Access to the data can be gained by an Organisational Licence or an Individual Licence. You MUST be a registered user to use the data. Organisations that are likely to have more than four individuals who wish to use the HILDA data should consider signing up to an Organisational Licence as this would provide quicker access to the data (and at a lower cost) once the Organisational Licence is signed. Details of how to order the data are provided on the HILDA website: http://www.melbourneinstitute.com/hilda/data/

3.2 Cross-National Equivalent File (CNEF)

The Cross National Equivalent File originated from a Cornell University project to create an equivalent set of income measures for the German Socio-Economic Panel (SOEP) and the American Panel Study of Income Dymanics (PSID). It has since expanded to include data from many other countries which are undertaking longitudinal household panels (Australia, Canada, Germany, Great Britain, Korea, Switzerland and the United States), and the range of data has expanded to include employment, health and psychological measures. The HILDA-CNEF long file and codebooks are included on the HILDA DVD. Breaking with CNEF convention, the variable names are prefixed with ‘zz’ (a Panelwhiz requirement). The codebooks are wave oriented, but it is straightforward to relate the documentation to the long variables supplied.

The current HILDA-CNEF codebooks and a link to ordering the CNEF data for other countries can be found at http://www.melbourneinstitute.com/hilda/cnef.html.

3.3 A Reminder of the Security Requirements for the Data

The Deed of Licence and the Deed of Confidentiality stipulates numerous security requirements for the data, some of which are outlined below:

- You CANNOT provide the data to any unauthorised individual (to be authorised, you must have an Individual Deed of Licence countersigned by the DSS delegate or have a Deed of Confidentiality countersigned by your organisation's approved Data Manager).
- You MUST include the following paragraph in any work written that use the HILDA data:

  > This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS), and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the author and should not be attributed to either DSS or the Melbourne Institute.

- If you plan to change employers and you have an Individual Deed of Licence, you MUST contact DSS ***before*** doing so to discuss suitable arrangements for the data. Under certain conditions you may be able to take the data with you. Otherwise, you will need to delete any data files and destroy the CD/DVD and notify DSS. (longitudinalsurveys@dss.gov.au) and the Melbourne Institute (hilda-inquiries@unimelb.edu.au) that you have done so.
- If you plan to change employers and your organisation has an Organisational Deed of Licence, you MUST contact your organisation's Data Manager to resolve your user obligations to the security of the dataset.
- If you change your research project you MUST first seek permission for the new project from DSS.
- The HILDA CD/DVD MUST be kept secure in a locked filing cabinet or other secure container when not in use.
- The keys or combinations for the filing cabinet or other secure container must be kept secure and not given to any unauthorised user.
- The HILDA data (and any derivatives of the HILDA data) must be stored on a password protected computer or network and must not be given to any unauthorised user.
- Your password MUST be:
  - a minimum length of 12 alphabetic characters with no complexity requirement; or
  - a minimum length of nine characters, consisting of at least three of the following character sets:

        - lowercase alphabetic characters (a–z)
        - uppercase alphabetic characters (A–Z)
        - numeric characters (0–9)
        - special characters.
    - Any printed unit record output MUST be stored in a locked filing cabinet or other secure container when not in use. Any printed unit record output MUST be shredded if no longer required.
    - There MUST be a means of limiting access to the work area where the data is kept and tamper evident barriers to access (i.e., if there were a break-in, it would be obvious from broken glass, damaged lock, etc.).

3.4 How the Data Files are Provided

All data are provided in SAS, SPSS[1] and STATA (Version 10 and 11)[2] formats. R can read the Stata datasets (see the readme pdf for one method). Q can read the SPSS datasets.

The DVD also includes extensive documentation of the data, including coding frameworks, marked-up questionnaires and variable frequencies. The files and the documentation are discussed in detail in later sections. Changes to the data files between Releases can be found in the readme pdf for the current release and for prior releases at:
http://www.melbourneinstitute.com/hilda/doc/previous_releases.html.

The data files can be transferred to other statistical packages using StatTransfer or any other data conversion package of your choice.[3] You may need to restrict the number of variables to be included in your transferred datasets due to the limitations on the number of variables imposed by some statistical packages.

3.5 Structure of the Data Files

For each wave, there are four files:

- Household File – containing information from the HF and HQ.
- Enumerated Person File – listing all persons in all ***responding*** households and contains limited information from the HF (includes respondents, non-respondents and children).[4]

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[1] SPSS portable files can be obtained by special request to hilda-inquiries@unimelb.edu.au.

[2] You will need to use STATA SE as there are more than 2047 variables in the datasets. Suitable *maxvar* values are provided in "Readme 140.pdf" on the DVD.

[3] A trial copy of StatTransfer can be downloaded from www.stattransfer.com or purchased online at http://www.circlesys.com/downloads/

[4] The variable *_hgenum* indicates whether the person belonged to a responding household each wave and this may be useful when selecting those who have been tracked over the entire study irrespective of whether they were interviewed (enumerated at all waves).

- Responding Person File – containing all persons who provided an interview and contains CPQ/NPQ and SCQ information.[5]
- Combined file – this is a combined file of the three files above. The household information and responding person information is matched to each enumerated person.

In addition, a master file and a longitudinal weights file are provided. The master file contains all persons enumerated at any wave, their interview status in each wave and limited information about the individual. You can convert the master file to a long format if you use the rest of the data in long format. The longitudinal weights file contains weights for all sequential balanced panel combinations and all balanced pairs of waves.

3.6 Identifiers and Useful Variables

Household and person level files within a wave can be merged by using *_hhrhid* (i.e. *ahhrhid* for wave 1, *bhhrhid* for wave 2, etc).[6] Note that if you are not using a long file where we use the underscore '_' in the variable name, you will need to replace it with the appropriate letter for the wave, 'a' for wave 1, 'b' for wave 2, etc. Enumerated and responding person files within a wave can be merged by using the cross-wave identifier xwaveid or the wave specific person identifier *_hhrpid*. In wave 1, the first six characters of *_hhrpid* is the household identifier and the last two characters of the person identifier is the person number within the household. In wave 2 onwards, the first five characters are the household identifier and the next two are the person number. From wave 11 onwards *_hhird* length reverts to six characters to accommodate the top-up sample.

Information from enumerated or responding person files can be linked across waves by using the cross-wave identifier *xwaveid*.

Note that while *xwaveid* is the unique identifier to match each person across all waves, *_hhrhid* and *_hhrpid* are specific identifiers to match each person within a wave. As *_hhrhid* and *_hhrpid* are randomly assigned each wave, the same person will have a different *_hhrhid* and *_hhrpid* from wave to wave. Persons in the same household in each wave will share the same *_hhrhid* and the same first 5 digits in *_hhrpid* (or the same first 6 digits in *ahhrpid* in the case of wave 1 and wave 11 onwards).

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[5] The variable *_hgint* indicates whether the person completed an interview and this is one way to select a balanced responding panel (*_hgint*=1 at all waves), or to reduce the Combined files into "interviewed adult only" files (this removes the person level records for children or non-responding adults from responding households which are included to describe the household when calculating measures such as the poverty rate or gini coefficient). Conversely *_hgni* allows selection and separation of not-interviewed adults and not-interviewed children aged < 15. *_scmatch* indicates that an SCQ has been matched to a PQ.

[6] Users of the In-confidence Release files can alternatively use *_hhid* to match the household and person files, and *_hhpid* to match the person files. In wave 1, the household identifier is six digits long, corresponding to area (three digits), dwelling number (two digits) and household number (one digit). The person identifier in wave 1 is then eight digits long – the first six are the household identifier, followed by two digits for the person number. In subsequent waves, the household identifier is five digits long, and the person identifier is seven digits long. From wave 11, to accommodate the top-up sample, the identifiers revert to the wave 1 lengths.

Partners within the household are identified by their cross-wave identifier (*_hhpxid*) or by their two digit person number for the household (*_hhprtid*). These variables are provided on both the enumerated and responding person files and are derived using the HF relationship grid. Partners are either married or defacto and include same sex couples. *_hhprtid* is the person number for the household (for example, if person 02's partner is person 05, the partner identifier for person 02 will contain '05' and for person 05 it will contain '02'). You will need to concatenate the household identifier with the partner identifier before you can match on partner characteristics to the person file. Using the partner's cross-wave identifier (*_hhpxid*) is much easier.

Parents *within the household* are similarly identified in *_hhfxid* and *_hhmxid* (father's and mother's crosswave identifiers) or *_hhfid* (father's person number) and *_hhmid* (mother's person number). A parent may be natural, adopted, step or foster (a parent's de facto partner also counts as a parent).

A list of other biological cross-wave identifiers can be found in Table 3.3.

Table 3.3: Other biological cross-wave identifiers

xwaveid	*Label*	*Notes*
_hhbmxid	DV: Biological Mother's cross wave id	For "ever-co-resident parents" (same household, own-parent or own-child relationship), the xwaveid of the parent (text, 7-digit). The biological parent's xwaveid is carried back or forward to all waves even if the parent is not co-resident but the child has been enumerated
_hhbfxid	DV: Biological Father's cross wave id	
_hhtwxid	DV: Twin cross wave id	For "ever-co-resident twins" (same household, same date of birth and full-siblings), the xwaveid of the twin (text, 7-digit). The twin's xwaveid is carried back or forward to all waves even if the twin is not co-resident. Adult not-co-resident twins are recorded in the PQ section on siblings asked in waves 8 and 12 (section HS) but they are not added to _hhtwxid (insufficient information to determine if they are part of the sample). Triplets, quadruplets etc. are not included in the twin identifiers
_hhmgmxd	DV: Maternal grandmother's cross wave id	Defined as the ever co-resident parents of the biological parents. Grandparents where the lineage (paternal or maternal) is not yet known are excluded (that is, in households where only the grandparents and grandchildren have been co-resident [across all the waves]). In addition, the variations that step parents and step grandparent and grand step parents introduce, both in terms of the number of relationships and the variation over time, has led to step relationships being excluded.
_hhmgfxd	DV: Maternal grandfather's cross wave id	
_hhpgmxd	DV: Paternal grandmother's cross wave id	
_hhpgfxd	DV: Paternal grandfather's cross wave id	

Listed below in Table 3.4 are some useful socio-demographic variables. These are provided to help new users get started with using the HILDA data.

Table 3.4: List of useful variables

Variable	*Description*	*Variable*	*Description*
xwaveid	Cross wave person identifier	_hhfty	Family type
_hhrhid	Random household identifier	_hhiu	Income unit
_hhrpid	Random person identifier	_hhpers	Number of persons in household
_hhtup	Wave 11 top-up - person	_hhtype	Household type
_hhtuh	Wave 11 top-up - household	_hhpxid	Partner's cross-wave identifier
hhsm	Sample member type	_hhfxid	Father's cross-wave identifier
_hhresp	Household response status	_hhmxid	Mother's cross-wave identifier
_fstatus	Person response status (master file)	_hhstate	State
_hhyng	Age of youngest person in HH	_hhsos	Section of state
_hhold	Age of oldest person in HH	_hhmsr	Major statistical region
_hhrih	Relationship in household	_ancob	Country of birth
_hhfam	Family number	_hgage	Age
_esbrd, _esdtl	Employment status (broad, detail)	_hgsex	Sex
_losat	Life satisfaction	_mrcurr	Marital status
_jbhruc	Combined per week usually worked in all jobs	_edhigh1	Highest education level achieved
_jbmo62	Occupation code 2-digit ANZSCO	_edfts	Full-time student
_wscei	Imputed current weekly gross wages and salary – all jobs	_edagels	Age left school
_wsfei	Imputed financial year gross wages and salary	_edhists	Highest year of school completed/currently attending
_hifdip, _hifdin	Household disposable income (positive and negative)	_edtypes	Type of school attended/attending
_hhda10	SEIFA decile of socio-economic disadvantage	_helth	Long term health condition/disability/impairment from PQ

3.7 Program Library

Several programs have been provided on the HILDA website in SAS, SPSS and Stata to help you get started with the HILDA data. These files are found on http://www.melbourneinstitute.com/hilda/doc/programlibrary.html

3.7.1 Match Files

The programs showing how to match files are:

- Program 1 – SAS program to match wave 1 household and responding person files.
- Program 2 – SPSS program to match wave 1 household and responding person files.
- Program 3 – Stata program to match wave 1 household, enumerated and responding person files.

3.7.2 Add Partner Variables

Some users may want to include variables for a respondent's partner in their analyses. The programs showing how to utilise the partner's cross-wave identifier *_hhpxid* to add partner variables onto the responding person file are:

- Program 4 – SAS program to add partner variables
- Program 5 – SPSS program to add partner variables
- Program 6 – Stata program to add partner variables

3.7.3 Create Longitudinal Files

There are a number of ways users might want to create a balanced longitudinal file:

- Wide file of responding persons – this is where we keep only people responding in all waves and put the variables for each wave next to each other (that is, there is one row of data for each person).
- Wide file of enumerated persons – this is where we keep only those people who were in responding households in all waves and the variables for each wave are put next to each other.
- Long file of responding persons – this is where we keep only people responding in all waves and the information for each wave is stacked together (that is, there is a separate row of data for each wave of information for each person).
- Long file of enumerated persons – this is where we keep only those people who were in responding households in all waves and the information for each wave is stacked together.

Most users will probably want to restrict the files to only include respondents or people from responding households. A few users may also want to add people who have died or moved out of scope (depending on the research question they are answering).

The programs showing how to create balanced long files of responding persons are:

- Program 7 – SAS program to create long longitudinal files.
- Program 8 – SPSS program to create long longitudinal files.

The wide files are created by matching the responding or enumerated files for each wave together using *xwaveid*. An alternative way to strip off the first letter of the variable names in SAS is provided in

- Program 9 – SAS macro to strip the first letter from the variable name.

Some users may want to create an unbalanced panel – where you take all respondents or enumerated persons available at each wave (not just those that consistently respond or are consistently in responding households). An example Stata program to create a balanced or unbalanced panel is provided in

- Program 10 – Stata program to create long longitudinal files[7].

Example programs to create wide files are provided in:

- Program 11 – SAS program to create wide longitudinal files.
- Program 12 – SPSS program to create wide longitudinal files.
- Program 13 – Stata program to create wide longitudinal files.

The longitudinal weights on the enumerated person file and the responding person file are for the full balanced panel of respondents and enumerated persons from wave 1 (i.e., across the first two, three, … fourteen waves). If you are constructing a balanced panel with different specifications, you should find a suitable weight in the longitudinal weights file. Out of scopes (deaths and moves overseas) are treated as acceptable outcomes, so these people have weights applied as well.

3.7.4 User Provided Programs

A number of user written programs have been added to the program library (link above). Users of the HILDA data can contribute code to this library if they believe it may be beneficial to other users. Please send your code to hilda-inquiries@unimelb.edu.au

3.8 PanelWhiz

PanelWhiz is a collection of Stata/SE Add-On scripts to make using panel datasets easier. PanelWhiz simplifies finding, retrieving and managing variables from multiple waves (without the need to refer to external documentation or type long lists of complicated variable names), selecting appropriate weights, matching partner information and a variety of other common tasks that occur in panel research. By allowing you to save variable 'sets' it also simplifies replacing your working files at subsequent releases of HILDA data. The package creates a long longitudinal file. The interface only runs in Stata/SE, but you can export the created datasets into SPSS, SAS, LIMDEP, GAUSS, and Excel.

[7] This program requires at least 2Gb memory to run. If your computer does not have this much memory then you will need to restrict the datasets to only the subset of variables you need.

PanelWhiz is available for the HILDA general release and unconfidentialised Stata files. It requires all the following files to be in the same directory: the fourteen Combined *140c.dta files, Master_n140c.dta, Longitudinal_weights_n140c.dta; CNEF_Long_n140c.dta and _version (all can be found in “STATA 140c zip”); or, for unconfidentialised users, the corresponding u.dta files.

PanelWhiz is charityware, requiring the user to make a direct donation to UNICEF. Details of how to order PanelWhiz can be found at www.panelwhiz.eu.

3.9 Variable Name Conventions

Variable names have been limited to eight characters (so that the files can be read in older versions of SPSS and SAS). The variable name is divided into three parts and attempts to provide information on the content of the variables:

- First character – wave identifier, with ‘a’ being used for wave 1, ‘b’ for wave 2, ‘c’ for wave 3, etc.
- Second and third character – general subject area (see Table 3.5 for the conventions).
- Fourth to eighth character – specific subject of data item.

Excluding the first character, variable names are the same across waves if the question, question routing (population asked) and response options are the same. If the question or response options have significantly changed, the variable name will also be modified. There are, however, a few (fieldwork) variables where we have decided to vary from this convention:

- Household response status;
- Person response status;
- Household membership;
- New location of mover; and
- Overall self completion office code.

For these variables, it was thought more important to keep the same variable names. These variables are used for survey administration purposes by the HILDA Survey team at the Melbourne Institute. Many users will not use the detail in these variables.

Table 3.6 to Table 3.10 show how the response categories differ for these variables across waves.

Table 3.5: Broad subject area naming conventions, characters 2 and 3 (sorted by code)

Code	*Broad Subject Area*	*Code*	*Broad Subject Area*	*Code*	*Broad Subject Area*
AL	Leave	HG	Household enumeration grid	NS	Non-employment related child care for children at school
AN	Ancestry	HH	Household information, identifiers and cross-sectional weights	OA	Other assets
AP	Activity - Physical	HI	Household income	OI	Other income
AT	Attitudes and values	HS	Housing	OP	Other property
BA	Bank accounts	HW	Household wealth	OR	Other relationships
BF	Business Finance	HX	Household expenditure	PA	Parenting
BI	Business Income	IC	Intentions to have children	PD	Kessler-10
BM	Body mass index	IO	Interviewer observation	PH	Private health insurance
BN	Benefits	IP	Intentions and plans	PJ	Previous job
BS	Brothers and sisters	JB	Job characteristics of employed	PN	Personality
CA	Calendar	JD	Job discrimination	PR	Partnering / relationships
CC	Child care general	JO	Opinions about job	PS	Parent status
CE	Children's education	JS	Job search of those not employed	PW	Personal wealth
CH	Child care during school holidays	JT	Job Training	RC	Resident children
CN	Non-employment related child care	LE	Major life events	RE	Religion
CP	Child care for children not yet at school	LF	Labour Force	RG	Relationship grid
CR	Credit cards	LN	Longitudinal weights	RP	Residential property
CS	Child care during school terms	LO	Life opinions	RT	Retirement intentions
CT	Cognitive Ability Tests	LS	Lifestyle	RW	Replicate weight
DC	Children - deceased	LT	Literacy	SA	Superannuation
DH	Decisions - household	MC	Marriage and children	SC	Self-Completion
DO	Dwelling observations	MD	Material Deprivation	SK	Skills and abilities
DT	Personal debt	MH	Moving house	SL	Sleep
ED	Education	MO	Mutual obligations	SS	Salary Sacrifice
EH	Employment history	MR	Marital relationships	TA	Training aims
ES	Employment status	MS	Marital Status	TC	Total children
FA	Financial assets	MV	Motor vehicles	TI	Total income
FF	Food frequency and diet	NB	Non-cash benefits	TS	Time stamps
FI	Attitudes to finances	NC	Non-resident children	TX	Taxes
FM	Family background	NL	Not in labour force	UJ	Job history of those not in paid employment
FT	Fertility	NM	Numeracy	WC	Workers compensation
GB	Government Bonus	NP	Non-employment related child care for children not yet at school	WS	Wage and salaries
GC	Grandchildren	NR	Non co-residential de facto relationship	XP	Expenditure reported by individual
GH	General health and well-being			YE	Youth - employment
HB	Household bills			YH	Youth - education
HC	Children's Health			YI	Youth - importance
HE	Health			YP	Youth - property
				YS	Youth - life satisfaction

Table 3.6: Different codes for household response status

Description (applies to final _hhresp, initial _hhrespi[1], follow-up _hhrespf[1])	*Codes used*			
	Wave 1	*Wave 2*	*Wave 3*	*Wave 4+*
Full Response				
Every eligible member of current HH interviewed	62	62	62	62
Part Response				
Part refused	63	63	63	63
Part non-contact	64	64	64	64
Part contact made with all non-response	65	65	65	65
Part away for workload period	66	66	66	66
Part language problem	67	67	67	67
Part incapable/death/illness	68	68	68	68
Non-Response				
Refusal	69			
Refusal - PSMs still live there		69	69	69
Refusal - Don't know if PSMs still live there		70	70	70
Address occupied - no contact with a sample member	70	71	71	71
Contact made and all calls made	71	72	72	72
All residents away for workload period	72	73	73	73
HH does not speak English	73	74	74	74
HH incapable/illness	74	75	75	75
Refusal to Nielsen via 1800 number	75	76	76	76
Terminate (no PQs)	76	77	77	77
HH deceased	N/A	78	78	78
HH moved out of scope	N/A	79	79	79
All PSMs moved in with another PSM	N/A	N/A	80	80
All PSMs non-respondents in last 2 waves	N/A	N/A	81	81
Not in area/no phone number				82
Untraceable[2]	N/A	99	99	99
Not issued this wave	N/A	N/A	100	100

Deceased at previous wave	N/A	N/A	101	101
TSM no longer living with PSM at previous wave				102
Dwelling out of scope				
Dwelling vacant for workload period	77	N/A	N/A	N/A
Non-private dwelling - place of business	78	N/A	N/A	N/A
Used for temporary accommodation only	79	N/A	N/A	N/A
Institution with no private HH usually resident	80	N/A	N/A	N/A
Not a main residence (e.g. holiday home)	81	N/A	N/A	N/A
All people in household out of scope	82	N/A	N/A	N/A
Derelict dwelling/demolished/to be demolished	83	N/A	N/A	N/A
Dwelling under construction/unliveable renovations	84	N/A	N/A	N/A
Listing error	85	N/A	N/A	N/A

[1] *_hhrespi* and *_hhrespf* are only on the unconfidentialised Release files. For initial response status *_hhrespi*, subtract 60 from all codes except 98 and 99. For follow-up response status *_hhrespf*, subtract 30 from all codes except 98 and 99.

[2] For *_hhrespi* only: Untraceable is coded 89.

Table 3.7: Different codes for person response status

Description (applies to _fstatus, initial _hgri and _hgri1 to hgri18; follow-up _hgrf and hgrf1 to hgrf18; final _hgivw and _hgivw1 to _hgivw18[1])	*Codes used*		
	Wave 1	*Wave 2*	*Wave 3+*
Interview in person	1	1	1
Interviewed by telephone	2	2	2
Ineligible for interview			
Less than 15 years old at 30th of June	3	3	3
Overseas for more than 6 months	N/A	4	4
In prison	N/A	5	5
TSM no longer living with PSM	N/A	N/A	6
Not part of the household NFI	4		
Refusal			
Too busy	12	6	7
Too invasive	11	7	8

Other reasons	13	8	9
Refusal via 1800 number/email	14	9	10
Interview terminated	15	10	11
Other non-interview			
Deceased	N/A	11	12
Moved to another HF	N/A	12	13
Language problem	6	13	14
Incapable/illness/infirmity	5	14	15
Home but unable to contact	9	15	16
Away for workload period	8	16	17
Away at boarding school/university	7		
Other reasons	10		
Household non-contact	N/A	17	18
Household contact made no interviews	N/A	18	19
Household not issued to field – persistent non-respondent	N/A	N/A	20
Overseas permanently	N/A		21
Household all PSMs non-responding in last 2 waves	N/A	N/A	22
Permanently incapable from previous wave	N/A		23
Household out of scope NFI	N/A	19	
Untraceable overseas	N/A		27
Overseas and aged < 15	N/A	20	28
Untraceable from prior waves	N/A	N/A	29
Untraceable determined this wave	N/A	99	99

[1] _hgri, _hgri1 to hgri18, hgrf and hgrf1 to hgrf18 are only on the unconfidentialised Release.

Table 3.8: Different codes for household membership

Description (applies to _hghhm, _hghhm1 to _hghhm18[1])	*Codes used*		
	Wave 1	*Wave 2*	*Wave 3+*
Listed			
Resident	N/A	1	1
Absent for workload	N/A	2	2
No longer member of household	N/A	3	3
Deceased	N/A	4	4
Not listed			
Re-joiner/merger	N/A		5
New resident	N/A	5	6
Absent for workload new resident	N/A	6	7

[1] For *_hghhm*, the value labels are quite different, but the meaning of many of the codes is the same. Wave 3 value labels are listed in this table.

Table 3.9: Different codes for new location of mover

Description (applies to _hgnlc1 to _hgnlc18[1])	*Codes Used*			
	Wave 1	*Wave 2*	*Wave 3-6*	*Wave 7+*
Within Australia – new local address	N/A	2	1	1
Within Australia – new non-local address	N/A	3	2	2
Address unknown	N/A	4	3	3
Deceased	N/A	5	4	4
Overseas permanently	N/A		5	
Overseas but not permanently	N/A		6	
Overseas	N/A	1		5

Table 3.10: Different codes for overall self completion office code

Description (applies to _ hgscq1 to _ hgscq18[1])	*Codes Used*	
	Wave 1-8	*Wave 9+*
Picked Up	1	1
Refused	2	3
To be sent	3	2
Not given	4	4
Provided - not picked up yet		8
Eligible - Update PQ Status		9

[1] _hgscq1 to *hgscq18*, are only on the unconfidentialised Release.

3.10 Missing Value Conventions

Global codes are used throughout the dataset to identify missing data. These codes are not restated for each variable in the coding framework.

3.10.1 Numeric Variables

All missing numeric data are coded into the following set of negative values shown in Table 3.11.

When performing mathematical operations (sum, mean, product etc.) or running a procedure which summarises the data, researchers must first assign or program for the missing values. Failure to do so will give inaccurate or distorted results.

Table 3.11: Missing value conventions for numeric variables

Code	*Description*
-1	Not asked: question skipped due to answer to a preceding question
-2	Not applicable
-3	Don’t know
-4	Refused or not answered
-5	Invalid multiple response (SCQ only)
-6	Value implausible (as determined after intensive checking)
-7	Unable to determine value
-8	No Self-Completion Questionnaire returned and matched to individual record
-9	Non-responding household
-10	Non-responding person (Combined File only)

Note that the SPSS files have these global missing values (-10 to -1) set to SPSS user-defined missing. To turn off this setting for an individual variable use:

```
missing values varname1 ().
```

To turn off this setting for all variables (for example, if you need to include those who are coded as -1 'Not asked') use the following code:

```
set errors=none.
do repeat x=all.
missing values x ().
end repeat.
set errors=listing.
execute.
```

3.10.2 Text Variables

Text variables with missing values will typically contain the following text (as shown in Table 3.12).

Table 3.12: Missing value conventions for text variables

Text	*Description*
[blank]	Missing information (no reason specified)
-1	Not asked
-2	Not applicable
-3	Don’t know
-4	Refused
-7	Unable to determine value
-9	Non-responding household

3.11 Data With Negative Values

Data items that can have both negative and positive values, such as business income, total household income, etc., are provided as two variables:

- the variable for positive amounts; and
- the variable for negative amounts.

If the overall value is not missing and is positive, then the negative variable will be zero and the positive variable will hold the actual value. If the overall value is not missing and is negative, then the positive variable will be zero and the negative variable will hold the absolute value of the amount. For example, if we have a person with a business income loss of $20,000 in the last financial year, then the positive variable of business income will be zero and the negative variable will be $20,000.

Missing data information will be provided in both variables following the negative conventions described above.

Therefore, after handling the missing data, you can create your own variable by subtracting the negative variable from the positive variable. For example, you might set the missing values of business income to system missing and then create a new business income variable as follows:

abifp-abifn

or for the imputed version of business income (which has no missing cases but follows the same convention of splitting positive and negative values):

abifip-abifin

3.12 Confidentialisation

The HILDA datasets released have been confidentialised to reduce the risk that individual sample members can be identified.[8] This has involved:

- withholding some variables (such as day and month of birth, postcode and detailed geography);
- aggregating some variables (for example, occupation has been provided at the two digit level while it is collected at the four digit level); and
- top-coding some variables (such as income and wealth variables).

Top-coding substitutes an average value for all the cases which are equal to or exceed a given threshold. The substituted value is calculated as the weighted average of the cases subject to top-coding. As a result, the cross-sectional weighted means of the top-coded variable will be the same as the original variable.

Take, for example, the top-coding of *_wscg* (current gross wages per week in main job). All cases whose wages are equal or exceed $4800 have had their value replaced by the weighted average of all those cases whose income is equal to or exceeds $4800. Let us say that the weighted average of the 22 cases earning $4800 or more is $8450. $8450 is then substituted as the wages for those 22 cases. This provides confidentiality and preserves the weighted distribution means. If the distribution of wages had been simply cut off at $4800, when the relevant weights are applied, the mean would be too low.

The top-coding thresholds are adjusted over time to overcome the tendency of income and wealth measures to inflate. Without adjustment, increasing numbers of cases would exceed the threshold and be topcoded. If you need to know the

[8] For Release 1 to 4 and Release 10 onwards the HILDA data files were referred to as the “confidentialised” and “unconfidentialised” files. From Release 5 to 9 these files are referred to as the “General Release” files (the confidentialised files) and the “In-confidence Release” files (the unconfidentialised files).

threshold values that have been used at a particular release, see “HILDA-thresholds-by-wave.csv” in the Documentation zip.

4 DERIVED VARIABLES

Derived variables are created from the data in the following circumstances.

- When questions are asked in an easy-to-answer form which requires recombination to a common metric.
- When some 'other, specify' answers are coded (notably sources of other income).
- When a complex combination of data occurs (for example, family type; household disposable income).
- When open-ended answers are converted to standard codeframes (industry; occupation; post-school qualifications).
- When missing data are imputed.
- When external data are matched to derive applicable measures (for example, socio-economic indicators for areas; remoteness area).
- When data is carried over or accumulated across waves (history variables).

Derived variables are created at both the household and person levels. Most derived variables are available each wave. A description of how the variable was derived is supplied in the coding framework and additional information is provided in this manual as necessary.

All derived variables have the prefix 'DV:' or 'History:' in the variable label. Missing values have the same codes as collected data. Derived variables are not annotated on the marked up questionnaires, but are included in the various coding frameworks.

4.1 Age and Sex

For each person interviewed, two ages have been provided:

- *_hgage* which is the age at last birthday as of 30 June immediately preceding the fieldwork for that wave (for wave 1, *ahgage* is the respondents age at 30 June 2001); and
- *_hhiage* which is the age at last birthday as of the date of interview for that wave (the interview dates for each wave spread over 6 to 8 months).

For non-interviewed people in responding households, *_hgage* is provided on the enumerated file.

In the household and combined files, the age (at the 30th of June) of each person in the household is derived in the variables *_hgage1* to *_hgage16,* where *_hgage1* is for person 01, etc. These variables are numbered in the order household members were listed on the Household Form and the number at the end of the variable corresponds to the 2-character person number _hhpno.

New-born children born between 30th June and the subsequent household structure date are, by convention, assigned an age of 0. For the small number of cases where age was not provided, it has been imputed via a hotdeck method[9] and *_hgagef, _hgagf1 to _hgagf18* flags which cases have been imputed.

Note that if the respondent provides a correction to the date of birth listed on the Household Form each wave, this correction is applied back through the previous waves. As a result the above calculated ages may change from one release to another (hopefully not by much!). This is why you may find some 14 year olds interviewed in an earlier wave.

Similarly, if the respondent provides a correction to the sex listed on the Household Form each wave, this correction is applied back through the previous waves.

4.2 History

History variables contain data accumulated across successive waves. Some history variables contain background information that does not change and is only asked in the first interview (e.g. country of birth). Others contain accumulated statuses (e.g., number of qualifications; current marriage duration). The variables are provided in the responding person file each wave from wave 2 onwards, and show the status at the completion of each wave.

History variables first have data in the year the respondent entered the survey, and are updated the next time the respondent is interviewed. Someone who was a new entrant at say wave 2 and was interviewed, did not respond in wave 3 and was interviewed again in wave 4 will not have history data for waves 1 and 3, even for invariant information such as Country of Birth. Those using unbalanced panels will be particularly affected and may need to write a program to 'fill-in' the missing years.

History variables have the prefix ‘History:’ in the variable label. History variables are not annotated on the marked up questionnaires, but are included in the various coding frameworks. Notes about the construction of the variables are included in the coding framework (and are not duplicated here).

Table 4.1 provides a list of the history variables included on the datasets except for the variables relating to the occupation of the respondent’s father and mother (which are provided with other occupation variables in Table 4.7).

[9] The hotdeck method seeks to find a donor with a similar set of characteristics to the non-respondent. See Hayes and Watson (2009) for more details.

Table 4.1: History variables

Variable	*Description*
Ancestry	
_ancob, _anbcob	Country of birth (full, brief)
_anyoa	Year first came to Australia to live
_anengf	Is English the first language you learned to speak as a child
_anatsi	Aboriginal or Torres Strait Islander origin
Family background	
_fmlwop	Were you living with both your own mother and father around the time you were 14 years old
_fmnprea	Why were you not living with both your parents at age 14
_fmpdiv	Did your mother and father ever get divorced or separate
_fmpjoin	Did your mother and father ever get back together again
_fmageps	How old were you at the time your parents separated
_fmagelh	How old were you when you first moved out of home as a young person
_fmhsib	Ever had any siblings
_fmnsib	How many siblings
_fmeldst	Were you the oldest child
_fmfcob	Father's country of birth
_fmmcob	Mother's country of birth
_fmfemp	Was father in paid employment when you were 14
_fmfuemp	Was father unemployed for 6 months or more while you were growing up
_fmmemp	Was mother in paid employment when you were 14
Education	
_edagels	Age left school
_edhists	Highest level of school completed/currently attending
_edtypes	Type of school attended/attending
_edcly	Country of last school year
_edqenr	Ever enrolled in a course of study to obtain a qualification
_edcoq	Country completed highest qualification in

Variable	*Description*
_edq100, _edq110, _edq120, _edq200, _edq211, _edq221, _edq310, _edq311, _edq312, _edq400, _edq411, _edq413, _edq421, _edq500, _edq511, _edq514, _edq521, _edq524, _edq600, _edq611, _edqunk	Number of qualifications obtained since leaving school (ASCED): 100 Postgraduate 110 Doctoral Degree 120 Master Degree 200 Grad Diploma and Grad Certificate 211 Graduate Diploma 221 Graduate Certificate 310 Bachelor Degree 311 Bachelor (Honours) Degree 312 Bachelor (Pass) Degree 400 Advanced Diploma and Diploma 411 Advanced Diploma 413 Associate Degree 421 Diploma 500 Certificate – don't know level 511 Certificate Level IV 514 Certificate Level III 521 Certificate Level II 524 Certificate Level I 600 Secondary education 611 Year 12 Unknown - not enough information
_edhigh1	Highest education level achieved
_fmfhlq	Type of institution fathers highest level qualification obtained from
_fmfpsq	Father completed an educational qualification after leaving school
_fmfsch	How much schooling father completed
_fmmhlq	Type of institution mothers highest level qualification obtained from
_fmmpsq	Mother completed an educational qualification after leaving school
_fmmsch	History: How much schooling mother completed
Marriage and De facto Relationships	
_mrn	How many times have you been legally married
_mrpmth	Month - present or most recent marriage
_mrpyr, _mr1yr, _mr2yr, _mr3yr, _mr4yr	Year (present/most recent marriage, first, second, third, and fourth marriages)
_mrplv, _mr1lv, _mr2lv, _mr3lv, _mr4lv	Live together before marriage (present/most recent marriage, first, second, third, and fourth marriages)
_mrpend, _mr1end, _mr2end, _mr3end, _mr4end	How did the marriage end (present/most recent marriage, first, second, third, and fourth marriages)
_mrpwidw, _mr1widw, _mr2widw, _mr3widw, _mr4widw	Year widowed (present/most recent marriage, first, second, third, and fourth marriages)
_mrpsep, _mr1sep, _mr2sep, _mr3sep, _mr4sep	Year separated (present/most recent marriage, first, second, third, and fourth marriages)
_mrpdiv, _mr1div, _mr2div, _mr3div, _mr4div	Year divorced (present/most recent marriage, first, second, third, and fourth marriages)
_ordfpst	Ever lived with someone for at least one month without marrying
_ordfnum	Number of defacto relationships lasting at least 3 months

Variable	*Description*
_mrplvt, _mr1lvt, _mr2lvt, _mr3lvt, _mr4lvt	Years lived together before marriage (present/most recent marriage, first, second, third, and fourth marriages)
_orcdur	Current defacto duration - years
_mrcdur	Current marriage duration - years
_mrwdur	Current widow duration - years
_mrsdur	Current separated or divorced from date of separation – years
Children	
_tchad[1]	Total children ever had
_tcdied[1]	Total children since died
Employment	
_rtage	Age retired/intends to retire
_ehtse	Time since FT education - years
_ehtjb	Time in paid work - years
_ehtuj	Time unemployed and looking for work - years
_ehto	Time not working and not looking for work - years
Health[2]	
_hespncy, _heheary, _hespchy, _hebflcy, _hesluy, _heluafy, _hedgty, _helufly, _henecy, _hecrpay, _hedisfy, _hemirhy, _hesbdby, _hecrpy, _hehibdy, _hemedy, _heothy	Year condition first developed -Sight problems not corrected by glasses/lenses -Hearing problems -Speech problems -Blackouts, fits or loss of consciousness Difficulty learning or understanding things -Limited use of arms or fingers -Difficulty gripping things -Limited use of feet or legs -A nervous or emotional condition which requires treatment -Any condition which restricts physical activity or physical work (e.g. back problems, migraines) -Any disfigurement or deformity -Any mental illness requiring help or supervision -Shortness of breath or difficulty breathing -Chronic or recurring pain -Long term effects as a result of a head injury, stroke or other brain damage -Long term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it -Other long term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.)
Housing	
_hsyrcad	Years at current address

Variable	*Description*
Migration[3]	
_annzcit	Were you a New Zealand citizen when you arrived in Australia
_anaf99	Did respondent arrive in Australia after 1999
_anpapp	Australian visa - Primary applicant
_anmigc	Migration category when you or your family first arrived in Australia
_anafpay	Who paid for your (air)fare to come to Australia
_anref	Did you (and your family) come to Australia as refugees or under a humanitarian migration program
_ancitiz	Australian citizenship

[1] For these variables, 'children' refers to the respondent's natural and adopted children.
[2] Wave 3 onwards.
[3] Wave 4 onwards.

4.3 Geography

The household addresses from each wave have been geocoded and assigned a 2001 Census Collection District (CD), 2006 Census CD, 2011 Statistical Area Level 1 (SA1) and the 2011 Local Government Area.[10] 2011 Statistical Area Level 1 (SA1) and other new ASGS 2011 geography variables are added for all waves. Where the address details were not sufficient to geocode exactly, the nearest cross section or street segment was used. Further, some fuzzy matching and manual look-up of maps were employed where the street name or suburb did not provide a reasonable match. We build up from the 2001 CD level to the following geographic regions:

- Statistical Local Area (SLA);
- Local Government Area (LGA);
- Statistical Sub-Division (SSD);
- Statistical Division (SD);
- Section of State (SOS); and
- Major Statistical Region (MSR).

We also build from 2011 SA1 to these regions

- Statistical Area Level 2 (SA2);
- Statistical Area Level 3 (SA3);

[10] The 2001 and 2006 geography is based on the Australian Bureau of Statistics (ABS) Australian Standard Geographical Classification. For the 2011 census the ABS introduced the Australian Statistical Geography Standard (ASGS). This new geographic classification is supplied in addition to the ASGC. See http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Australian+Statistical+Geography+Standard+(ASGS)

- Statistical Area Level 4 (SA4);
- Greater Capital City Statistical Area (GCCSA);
- Section of State (SOS); and
- Remoteness Area (RA).

Table 4.2 lists the derived geographic variables. Aside from the area identifiers, several other geographic variables are included on the file such as:

- Remoteness area – this is added based on the assigned 2001 Census Collection District. An additional version has been added based on ASGS 2011 SA1;
- Socio-Economic Indexes for Areas (SEIFA) – deciles are assigned for four types of SEIFA scores based on the assigned 2001 Census Collection District (or the assigned SLA if no seifa score is available for the CD; see Section 3.2 in "ABS 2039.0 - Information Paper: Census of Population and Housing -- Socio-Economic Indexes for Areas, Australia, 2001"). An additional series for SEIFA 2011 has been added based on ASGS SA1/SA2/LGA;
- The distance moved from the last wave – this is calculated from the geocoded addresses. Where the geocoding had to be approximated and the household moves close by, there may be some households who have moved but the distance moved is calculated as zero.

Other related geographic variables which are not derived that you should be aware of are State (*_hhstate*) and whether the household has moved from the last wave (*_hhmove*).

Table 4.2: Derived geographic variables

Variable	*Description*
_hhsla, _hhsla9 [1]	ASGC 2001 Statistical Local Area (5 digit, 9 digit)
_hhlga[1]	ASGC 2001 Local Government Area
_hhssd[1]	ASGC 2001 Statistical Subdivision
_hhsd[1]	ASGC 2001 Statistical Division
_hhmsr	ASGC 2001 Major Statistical Region
_hhsos	ASGC 2001 Section of State
_hhra	ASGC 2001 Remoteness area
_hhda, _hhad, _hhec, _hhed[1]	SEIFA 2001 Index: - relative socio-economic disadvantage - relative socio-economic advantage/disadvantage - economic resources - education and occupation

Variable	*Description*
_hhda10, _hhad10, _hhec10, _hhed10	SEIFA 2001 Decile of Index: - relative socio-economic disadvantage - relative socio-economic advantage/disadvantage - economic resources - education and occupation
_hhmovek, _hhmovem	Distance person moved since last wave (kilometres, miles) (wave 2 onwards)
_hhmvehk, _hhmvehm	Distance household moved since last wave (kilometres, miles) (wave 2 onwards)
ahhcd96[1]	ABS 1996 Census Collection District
_hhcd01[1]	ABS 2001 Census Collection District
_hhcd06[1]	ABS 2006 Census Collection District
_hhssa1[1]	ASGS 2011 Statistical Area Level 1 (SA1) 7-digit
_hhssa2[1]	ASGS 2011 Statistical Area Level 2 (SA2) 5-digit
_hhssa3[1]	ASGS 2011 Statistical Area Level 3 (SA3) 5-digit
_hhssa4[1]	ASGS 2011 Statistical Area Level 4 (SA4) 3-digit
_hhslga[1]	ASGS 2011 Local Government Area (LGA)
_hhsgcc	ASGS 2011 Greater Capital City Statistical Area (GCCSA)
_hhssos	ASGS 2011 Section of State (SOS)
_hhsra	ASGS 2011 Remoteness Area (RA)
_hhsad, _hhsec, _hhsed[1]	SEIFA 2011 Index: - relative socio-economic advantage/disadvantage - economic resources - education and occupation
_hhsad10, _hhsec10, _hhsed10	SEIFA 2011 Decile of Index: - relative socio-economic advantage/disadvantage - economic resources - education and occupation

[1] Variables are only on the Unconfidentialised Release files. See the Selected Standard Classifications (wrt).pdf for the coding framework. These variables have too many values to be included in the conventional frameworks.

4.4 Current Education

The education questions have been used to derive variables (listed in Table 4.3) based on the Australian Standard Classification of Education (ASCED).[11] There are a series of variables at the 3-digit ASCED level which contain information about:

- the number of qualifications completed (for new respondents only);
- which qualifications the respondent is currently studying for; and
- which qualifications have been obtained since the last interview (for continuing respondents only).

Where a qualification cannot be categorised to the detailed level (for example, 211 Graduate Diploma or 221 Graduate Certificate), the broader category has been used (for example, 200 Graduate Diploma and Graduate Certificate).

Unless you are specifically interested in what qualifications the respondent has completed since the last interview, you should use the history variables described earlier in Section 4.2 (which combines the answers provided in the current and previous wave interviews).

Table 4.3: Derived current education variables

Variable	*Description*	
Number of qualifications of people interviewed for the first time (ASCED):		
_edq100n, _edq110n,	100 Postgraduate	110 Doctoral Degree
_edq120n, _edq200n,	120 Master Degree	200 Grad Diploma and Grad Certificate
_edq211n, _edq221n,	211 Graduate Diploma	221 Graduate Certificate
_edq310n, _edq311n,	310 Bachelor Degree	311 Bachelor (Honours) Degree
_edq312n, _edq400n,	312 Bachelor (Pass) Degree	400 Advanced Diploma and Diploma
_edq411n, _edq413n,	411 Advanced Diploma	413 Associate Degree
_edq421n, _edq500n,	421 Diploma	500 Certificate - don't know level
_edq511n, _edq514n,	511 Certificate Level IV	514 Certificate Level III
_edq521n, _edq524n,	521 Certificate Level II	524 Certificate Level I
_edq600n, _edq611n,	600 Secondary education	611 Year 12
_edqunkn	Unknown - not enough information	
Qualifications currently studying for (ASCED):		
_edcq100, _edcq110,	100 Postgraduate	110 Doctoral Degree
_edcq120, _edcq200,	120 Master Degree	200 Grad Diploma and Grad Certificate
_edcq211, _edcq221,	211 Graduate Diploma	221 Graduate Certificate
_edcq310, _edcq311,	310 Bachelor Degree	311 Bachelor (Honours) Degree
_edcq312, _edcq400,	312 Bachelor (Pass) Degree	400 Advanced Diploma and Diploma
_edcq411, _edcq413,	411 Advanced Diploma	413 Associate Degree
_edcq421, _edcq500,	421 Diploma	500 Certificate - don't know level
_edcq511, _edcq514,	511 Certificate Level IV	514 Certificate Level III
_edcq521, _edcq524,	521 Certificate Level II	524 Certificate Level I
_edcq600, _edcq611,	600 Secondary education	611 Year 12
_edcqunk	Unknown - not enough information	

[11] ABS, Australian Standard Classification of Education (ABS Cat. No. 1272.0), ABS, Canberra, 2001.

Variable	*Description*	
Qualifications obtained since last interview (ASCED):		
_edrq100, _edrq110, _edrq120, _edrq200, _edrq211, _edrq221, _edrq310, _edrq311, _edrq312, _edrq400, _edrq411, _edrq413, _edrq421, _edrq500, _edrq511, _edrq514, _edrq521, _edrq524, _edrq600, _edrq611, _edrqunk	100 Postgraduate 120 Master Degree 211 Graduate Diploma 310 Bachelor Degree 312 Bachelor (Pass) Degree 411 Advanced Diploma 421 Diploma 511 Certificate Level IV 521 Certificate Level II 600 Secondary education Unknown - not enough information	110 Doctoral Degree 200 Grad Diploma and Grad Certificate 221 Graduate Certificate 311 Bachelor (Honours) Degree 400 Advanced Diploma and Diploma 413 Associate Degree 500 Certificate - don't know level 514 Certificate Level III 524 Certificate Level I 611 Year 12
_edfts	Full-time student	

4.5 Current Marital Status and Defacto Relationships

The relationship section of the person questionnaires involve relatively complicated skips (especially from wave 2 onwards), so several partnering variables have been derived as set out in Table 4.4.

Table 4.4: Derived current marital status and defacto relationship variables

Variable	*Description*
_mrcurr	Marital status from person questionnaire
_ordflt[1]	NPQ: Years living together, first defacto excluding current
_ordfrlt[2]	NPQ: Years living together, most recent defacto excluding current

[1] Waves 1 and from 4 onwards (NPQ)
[2] Waves 2 and 3 only

4.6 Children

Table 4.5 shows the various variables that have been created from the family formation section of the person questionnaires, including:

- the count of the number of the respondent's own resident and non-resident children (natural or adopted) of various ages, and the age of the respondent's own youngest child;
- the conversion into a common scale for the number of days or nights a child spends with their (other) parent; and
- the total child maintenance paid or received.

Table 4.5: Derived children variables

Variable	*Description*
All Children	
_icn[1]	How many more children do you intend to have
_icniz[2]	How many more children do you intend to have (including zero)
_tcyng	Age youngest own child (excl. foster/step)
Resident Children	
_tcr, _tcr04, _tcr514, _tcr1524, _tcr25	Count of own resident children: total; aged 0-4 yrs, 5-14 yrs, 15-24 yrs, 25+ yrs
_rcyng	Age youngest resident own child (excl. foster/step)
_rcngt	Resident child overnight stays with other parent (Days per annum)
_rcday	Resident child day visits with other parent (Days per annum)
_rcefspy[3]	Resident child maintenance paid - annual - all children ($)
_rcefsry[3]	Resident child maintenance received - annual - all children ($)
arcefsy[3]	Child maintenance received - annual - all children ($)
Non-resident Children	
_tcnr, _tcn04, _tcn514, _tcn1524, _tcn25	Count of own non-resident children: total; aged 0-4 yrs, 5-14 yrs, 15-24 yrs, 25+ yrs
_ncyng	Age youngest non-resident own child
_ncngt	Overnight stays of non-resident child (Days per annum)
_ncday	Day visits of non-resident child (Days per annum)
_ncefspy[2]	Non-resident child maintenance paid - annual - all children ($)
_ncefsry[2]	Non-resident child maintenance received - annual - all children ($)
ancefsy[2]	Child maintenance paid - annual - all children ($)
Total annual childcare cost	
ccactci	Annual child care total cost ($) [estimated]
ccactcf	Imputation flag annual child care total cost [estimated]

[1] Variable derived in waves 5, 8 and 11 (Fertility module). This question is asked in all other waves.
[2] Variable asked in waves 5, 8 and 11 (Fertility module)..
[3] In wave 1, the question only asked how much child maintenance they paid for non-resident children and how much they received for resident children. From wave 2 onwards, the questions were reworded to pay (*_ncefspy, _rcefspy*) or receive (*_ncefsry, _rcefsry*) for both non-resident and resident children.

4.7 Child Care

The variables from the child care grids in the Household Questionnaire are used to produce a number of summary variables (which are shown in Table 4.6). The children referred to in this section of the HQ are those living in the household aged under 15 and these are split into two groups:

- School-aged children – these children are of an age to attend school (that is, from aged 4 or 5, depending on the State).
- Children not yet at school – these children are aged 0 to 3 or 4, depending on the State.[12]

The child care questions have changed a number of times across the waves in the following ways:

- The reason the child care was used – In wave 1, only information about child care used while the parents were working was collected. From wave 2, questions were included about the child care used so parent could undertake non-employment related activities (such as studying, exercising, shopping, etc.).
- The level of detail collected for non-employment related child care – For waves 2 through 4, summary information was collected about the use of non-employment related child care. From wave 5, these grids contain a similar level of detail to the employment related child care grids.
- The level of detail collected for the cost of employment related child care – In wave 1, the cost of each type of child care for each child was collected. From wave 2 onwards, the total cost for each type of child care for the two groups of children (school aged and those not yet at school) was collected.
- The level of detail for relatives looking after children – The types of child care that made reference to ‘relatives’ in waves 1 to 3 were split into ‘grandparents’ and ‘other relatives’ from wave 4.

The child care summary variables indicate whether a particular type of child care is used, along with the hours and cost (summed across the relevant children). As some of these summary variables have been collected directly from the respondent in some or all waves (particularly with respect to cost), derived and non-derived variables are listed in Table 4.6 as appropriate for completeness.

[12] Up to wave 4, the questionnaire referred to the children not yet at school as ‘pre-school’ children. The shorter name was used in the questionnaire for space reasons but the interviewers were briefed on the intent of these questions to include all children who were not yet at school (not just those who aged 3 or 4 who are attending pre-school). The variable labels relating to the children not yet at school have been revised to use the ‘not yet at school’ terminology rather than the ‘pre-school’ terminology.

Table 4.6: Child care variables

	While parents work		*While parents are not working*		
	School-aged (term time)	*School-aged (holidays)*	*Not yet at school*	*School-aged*	*Not yet at school*
Type of care used					
Me or my partner	_csu_me	_chu_me	_cpu_me		
The child's brother or sister	_csu_bs	_chu_bs	_cpu_bs	_cnsu_bs[3]	_cnpu_bs[3]
Child looks after self	_csu_sf	_chu_sf			
Child comes to my workplace	_csu_wp	_chu_wp			
A relative who lives with us	_csu_ru[1]	_chu_ru[1]	_cpu_ru[1]	_cnsu_ru[4]	_cnpu_ru[4]
A relative who lives elsewhere	_csu_re[1]	_chu_re[1]	_cpu_re[1]	_cnsu_re[4]	_cnpu_re[4]
Child's grandparent who lives with us	_csu_gu[2]	_chu_gu[2]	_cpu_gu[2]	_cnsu_gu[2]	_cnpu_gu[2]
Child's grandparent who lives elsewhere	_csu_ge[2]	_chu_ge[2]	_cpu_ge[2]	_cnsu_ge[2]	_cnpu_ge[2]
Other relative who lives with us	_csu_au[2]	_chu_au[2]	_cpu_au[2]	_cnsu_au[2]	_cnpu_au[2]
Other relative who lives elsewhere	_csu_ae[2]	_chu_ae[2]	_cpu_ae[2]	_cnsu_ae[2]	_cnpu_ae[2]
A friend or neighbour coming to our home	_csu_fo	_chu_fo	_cpu_fo	_cnsu_fo[3]	_cnpu_fo[3]
A friend or neighbour in their home	_csu_ft	_chu_ft	_cpu_ft	_cnsu_ft[3]	_cnpu_ft[3]
A paid sitter or nanny	_csu_ps	_chu_ps	_cpu_ps	_cnsu_ps[3]	_cnpu_ps[3]
Family day care	_csu_fd	_chu_fd	_cpu_fd	_cnsu_fd[3]	_cnpu_fd[3]
Formal outside of school hours care	_csu_fc[2]			_cnsu_fc[3]	
Out of hours care at child's school	_csu_os[1]				
Out of hours care elsewhere	_csu_oe[1]				
Vacation care		_chu_vc[2]			
Vacation care at child's school		_chu_vs[1]			
Vacation care elsewhere		_chu_ve[1]			
Long day care centre at workplace			_cpu_wd		
Private or community long day care centre			_cpu_pd	_cnsu_pd[3]	_cnpu_pd[3]
Kindergarten/pre-school			_cpu_kp	_cnsu_kp[4]	_cnpu_kp[3]
Other parent not living in household/ex-partner	_csu_op	_chu_op	_cpu_op		

	While parents work		*While parents are not working*		
	School-aged (term time)	*School-aged (holidays)*	*Not yet at school*	*School-aged*	*Not yet at school*
Not applicable – Boarding school	_csu_br	_chu_br		_cnsu_br[5]	
Other 1	_csu_o1	_chu_o1	_cpu_o1	_cnsu_o1[3]	_cnpu_o1[3]
Other 2	_csu_o2	_chu_o2	_cpu_o2	_cnsu_o2[3]	_cnpu_o2[3]
Not answered	_csu_na	_chu_na	_cpu_na	_cnsu_na[3]	_cnpu_na[3]
None				_cnsu_np[3]	_cnpu_np[3]
Hours					
The child's brother or sister	_csh_bs	_chh_bs	_cph_bs	_cnsh_bs[3]	_cnph_bs[3]
Child looks after self	_csh_sf	_chh_sf			
Child comes to my workplace	_csh_wp	_chh_wp			
A relative who lives with us	_csh_ru[1]	_chh_ru[1]	_cph_ru[1]	_cnsh_ru[4]	_cnph_ru[4]
A relative who lives elsewhere	_csh_re[1]	_chh_re[1]	_cph_re[1]	_cnsh_re[4]	_cnph_re[4]
Child's grandparent who lives with us	_csh_gu[2]	_chh_gu[2]	_cph_gu[2]	_cnsh_gu[2]	_cnph_gu[2]
Child's grandparent who lives elsewhere	_csh_ge[2]	_chh_ge[2]	_cph_ge[2]	_cnsh_ge[2]	_cnph_ge[2]
Other relative who lives with us	_csh_au[2]	_chh_au[2]	_cph_au[2]	_cnsh_au[2]	_cnph_au[2]
Other relative who lives elsewhere	_csh_ae[2]	_chh_ae[2]	_cph_ae[2]	_cnsh_ae[2]	_cnph_ae[2]
A friend or neighbour coming to our home	_csh_fo	_chh_fo	_cph_fo	_cnsh_fo[3]	_cnph_fo[3]
A friend or neighbour in their home	_csh_ft	_chh_ft	_cph_ft	_cnsh_ft[3]	_cnph_ft[3]
A paid sitter or nanny	_csh_ps	_chh_ps	_cph_ps	_cnsh_ps[3]	_cnph_ps[3]
Family day care	_csh_fd	_chh_fd	_cph_fd	_cnsh_fd[3]	_cnph_fd[3]
Formal outside of school hours care	_csh_fc[2]			_cnsh_fc[3]	
Out of hours care at child's school	_csh_os[1]				
Out of hours care elsewhere	_csh_oe[1]				
Vacation care		_chh_vc[2]			
Vacation care at child's school		_chh_vs[1]			
Vacation care elsewhere		_chh_ve[1]			
Long day care centre at workplace			_cph_wd		

	While parents work		*While parents are not working*		
	School-aged (term time)	*School-aged (holidays)*	*Not yet at school*	*School-aged*	*Not yet at school*
Private or community long day care centre			_cph_pd	_cnsh_pd[3]	_cnph_pd[3]
Kindergarten/pre-school			_cph_kp	_cnsh_kp[4]	_cnph_kp[3]
Other 1	_csh_o1	_chh_o1	_cph_o1	_cnsh_o1[3]	_cnph_o1[3]
Other 2	_csh_o2	_chh_o2	_cph_o2	_cnsh_o2[3]	_cnph_o2[3]
Cost					
Total cost	_csctc	_chctc	_cpctc	_nsctc[3]	_npctc[3]
The child's brother or sister				_cnsc_bs[3]	_cnpc_bs[3]
Child comes to my workplace	_csc_wp	_chc_wp			
A relative who lives with us	_csc_ru[1]	_chc_ru[1]	_cpc_ru[1]	_cnsc_ru[4]	_cnpc_ru[4]
A relative who lives elsewhere	_csc_re[1]	_chc_re[1]	_cpc_re[1]	_cnsc_re[4]	_cnpc_re[4]
Child's grandparent who lives with us	_csc_gu[2]	_chc_gu[2]	_cpc_gu[2]	_cnsc_gu[2]	_cnpc_gu[2]
Child's grandparent who lives elsewhere	_csc_ge[2]	_chc_ge[2]	_cpc_ge[2]	_cnsc_ge[2]	_cnpc_ge[2]
Other relative who lives with us	_csc_au[2]	_chc_au[2]	_cpc_au[2]	_cnsc_au[2]	_cnpc_au[2]
Other relative who lives elsewhere	_csc_ae[2]	_chc_ae[2]	_cpc_ae[2]	_cnsc_ae[2]	_cnpc_ae[2]
A friend or neighbour coming to our home	_csc_fo	_chc_fo	_cpc_fo	_cnsc_fo[3]	_cnpc_fo[3]
A friend or neighbour in their home	_csc_ft	_chc_ft	_cpc_ft	_cnsc_ft[3]	_cnpc_ft[3]
A paid sitter or nanny	_csc_ps	_chc_ps	_cpc_ps	_cnsc_ps[3]	_cnpc_ps[3]
Family day care	_csc_fd	_chc_fd	_cpc_fd	_cnsc_fd[3]	_cnpc_fd[3]
Formal outside of school hours care	_csc_fc[2]			_cnsc_fc[2]	
Out of hours care at child's school	_csc_os[1]				
Out of hours care elsewhere	_csc_oe[1]				
Vacation care		_chc_vc[2]			
Vacation care at child's school		_chc_vs[1]			
Vacation care elsewhere		_chc_ve[1]			
Long day care centre at workplace			_cpc_wd		
Private or community long day care			_cpc_pd	_cnsc_pd[3]	_cnpc_pd[3]

	While parents work		*While parents are not working*		
	School-aged (term time)	*School-aged (holidays)*	*Not yet at school*	*School-aged*	*Not yet at school*
centre					
Kindergarten/pre-school			_cpc_kp	_cnsc_kp[4]	_cnpc_kp[3]
Other parent not living in household/ex-partner	_csc_op[2]	_chc_op[2]	_cpc_op[2]		
Not applicable – Boarding school	_csc_br[2]	_chc_br[2]			
Other 1	_csc_o1	_chc_o1	_cpc_o1	_cnsc_o1[3]	_cnpc_o1[3]
Other 2	_csc_o2	_chc_o2	_cpc_o2	_cnsc_o2[3]	_cnpc_o2[3]
Not Answered		_chc_na[2]			

[1] For waves 1 to 3.
[2] From wave 4.
[3] From wave 2.
[4] For waves 2 and 3.
[5] For wave 3 only

4.8 Occupation and Industry

The occupation and industry derived variables are listed in Table 4.7. The occupation and industry variables for waves 1 to 6 have been coded to two codeframes (correspondence conversion of the old codeframe to the new was only used if there was a 1-to-1 match between the old and new codeframes, otherwise the collected verbatim responses for waves 1 to 6 were coded into the new codeframe variables in 2008). From wave 7, only the new codeframes have been used.

The occupation variables were coded to the 4-digit Australian Standard Classification of Occupations (ASCO 1997) and to the 4-digit Australian and New Zealand Standard Classification of Occupations (ANZSCO 2006). These are then used to code:

- the 1-digit and 2-digit ASCO and ANZSCO codes;
- ANU4 occupational status scale which ranges from 0 to 100 (based on ASCO);
- AUSEI occupational status scale which also ranges from 0 to 100 (based on ANZSCO); and
- the 2-digit and 4-digit International Standard Classification of Occupation-88 (ISCO-88) codes based on both codeframes.

The industry variables were coded to the 4-digit First Edition and Second Edition of the Australian and New Zealand Standard Industry Classification (ANZSIC 1993 and 2006 respectively). These are then used to produce:

- the division level and 2-digit ANZSIC codes; and
- the 2-digit International Standard Industry Classification (ISIC) codes (only based on ANZSIC 2006).

The 4-digit ASCO, ISCO and ANZSIC codes are available on the Unconfidentialised Release files only.

For the occupation of the respondent's mother and father, users will find it easier to use the history variables listed in the following table rather than to compile the answers from the first interview each respondent provided.[13]

Users of the occupation and industry variables should be aware of the data quality issues associated with the coding of these variables (see Watson and Summerfield (2009)).

Table 4.7: Derived occupation and industry variables

	Occupation		*Industry*	
	Based on ASCO 1997[2]	*Based on ANZSCO 2006*	*Based on ANZSIC 1993*[2]	*Based on ANZSIC 2006*
Current main job				
1 digit	_jbmocc1[2]	_jbmo61	_jbmind1[2]	_jbmi61
2 digit	_jbmocc2[2]	_jbmo62	_jbmind2[2]	_jbmi62
4 digit[3]	_jbmocc[1,2]	_jbmo06[1]	_jbmind[1,2]	_jbmi06[1]
ISC 2 digit[4]	-	_jbm682	-	_jbmii2
ISC 4 digit[4]	-	_jbm688[1]	-	-
Status scale[5]	_jbmoccs[2]	_jbmo6s	-	-
Previous job (for those currently employed and answering the CPQ)				
1 digit	_pjoocc1[2]	_pjoo61	_pjoind1[2]	_pjoi61
2 digit	_pjoocc2[2]	_pjoo62	_pjoind2[2]	_pjoi62
4 digit[3]	_pjocc[1,2]	_pjoo06[1]	_pjoind[1,2]	_pjoi06[1]
ISC 2 digit[4]	-	_pjo682	-	_pjoii2
ISC 4 digit[4]	-	_pjo688[1]	-	-
Status scale[5]	_pjooccs[2]	_pjoo6s	-	-

[13] The NPQ ASCO variables are _fmfoccn, _fmfocn2, _fmfocn1 for father's 4-digit, 2-digit and 1 digit occupation and _fmmoccn, _fmmocn2, _fmmocn1 for mother's 4-digit, 2-digit and 1 digit occupation. The equivalent ANZSCO variables are _fmfo6n, _fmfo6n2, _fmfo6n1, _fmmo6n, _fmmo6n2, _fmmo6n1. These are combined into the history variables together with the wave 1 responses.

	Occupation		*Industry*	
	Based on ASCO 1997[2]	*Based on ANZSCO 2006*	*Based on ANZSIC 1993*[2]	*Based on ANZSIC 2006*
Previous job (for those not currently employed and answering the CPQ)				
1 digit	_pjotoc1[2]	_pjoto61	_pjotin1[2]	_pjoti61
2 digit	_pjotoc2[2]	_pjoto62	_pjotin2[2]	_pjoti62
4 digit[3]	_pjotocc[1,2]	_pjoto06[1]	_pjotind[1,2]	_pjoti06[1]
ISC 2 digit[4]	-	_pjot682	-	_pjotii2
ISC 4 digit[4]	-	_pjot688[1]	-	-
Status scale[5]	_pjotocs[2]	_pjoto6s	-	-
Last job (for those not currently employed and answering the NPQ)				
1 digit	_ujljoc1[2]	_ujljo61	_ujljin1[2]	_ujlji61
2 digit	_ujljoc2[2]	_ujljo62	_ujljin2[2]	_ujlji62
4 digit[3]	_ujljocc[1,2]	_ujljo06[1]	_ujljind[1,2]	_ujlji06[1]
ISC 2 digit[4]	-	_ujlj682	-	_ujljii2
ISC 4 digit[3,4]	-	_ujlj688[1]	-	-
Status scale[5]	_ujljocs[2]	_ujljo6s	-	-
Father's job (around the time the respondent was 14 years old – history variable)				
1 digit	_fmfocc1[2]	_fmfo61	-	-
2 digit	_fmfocc2[2]	_fmfo62	-	-
4 digit[3]	_fmfocc[1,2]	_fmfo06[1]	-	-
ISC 2 digit[4]	-	_fmf682	-	-
ISC 4 digit[3,4]	-	_fmf688[1]	-	-
Status scale[5]	_fmfoccs[2]	_fmfo6s	-	-
Mother's job (around the time the respondent was 14 years old – history variable)				
1 digit	_fmmocc1[2]	_fmmo61	-	-
2 digit	_fmmocc2[2]	_fmmo62	-	-
4 digit[3]	_fmmocc[1,2]	_fmmo06[1]	-	-
ISC 2 digit[4]	-	_fmm682	-	-
ISC 4 digit[3,4]	-	_fmm688[1]	-	-
Status scale[5]	_fmmoccs[2]	_fmmo6s	-	-
Father's job (around the time the respondent was 14 years old – wave 1 collected data)[6]				
1 digit	-	-	-	-
2 digit	afmfoc2o	afmfo62o	-	-

	Occupation		*Industry*	
	Based on ASCO 1997[2]	*Based on ANZSCO 2006*	*Based on ANZSIC 1993*[2]	*Based on ANZSIC 2006*
4 digit[3]	afmfocco[1]	afmfo06o[1]	-	-
ISC 2 digit[4]	-	afmf682o	-	-
ISC 4 digit[3,4]	-	afmf688o[1]	-	-
Status scale[5]	afmfocos	afmfo6os	-	-
Mother's job (around the time the respondent was 14 years old – wave 1 collected data)[6]				
1 digit	-	-	-	-
2 digit	afmmoc2o	afmmo62o	-	-
4 digit[3]	afmmocco[1]	afmmo06o[1]	-	-
ISC 2 digit[4]	-	afmm682o	-	-
ISC 4 digit[3,4]	-	afmm688o[1]	-	-
Status scale[5]	afmmocos	afmmo6os	-	-

[1] Variables are only on the Unconfidentialised Release files.
[2] Waves 1-6 only.
[3] These variables are not part of the derived variable list, but provided in this table for completeness.
[4] ISC=International standard classification. Occupation was coded to ISCO-88. Industry was coded to ISIC 3.1.
[5] Occupation status scale based on ASCO is the ANU4 status score whereas it is the AUSEI status score for ANZSCO.
[6] At wave 1 only, the family background questions B7 to B16 were skipped if the respondent was still living with both parents. A set of derived variables were created in release 1 with the information added for these respondents if both parents were interviewed (in releases 1 to 11 these derived versions had "d" appended to the variable name). From Release 12 both the collected and derived wave 1 variables are renamed. Collected variable names now have "o" (for original) appended, and the derived variables have had the "d" removed. This makes the history variables consistent across waves.

4.9 Other Employment

The other employment related derived variables are listed in Table 4.8. The history variables in Section 4.2 should first be consulted if you are attempting to piece together information about previous employment spells as some of the work may already be done.

In all waves except wave 2, the labour force status of individuals was asked on the Household Form, which provides useful information in the weighting and imputation processes for non-respondents. We have imputed the broad labour force status for all those people enumerated in wave 2 (see Hayes and Watson (2009) for details of how this was done).

Table 4.8: Other derived employment variables

Variable	*Description*
_esdtl, _esbrd	Labour force status (detail, broad)
_hhura	Unemployment rate for persons in same major statistical region
_jbhruc, _jbmhruc	Hours per week usually worked (all jobs, main job)

Variable	*Description*
_jbhrqf	Data Quality Flag: hours of work main job vs all jobs
_jbtprhr	Hours would like to work
_es	Employment status in main job if currently employed
_jbmtuea	DV: Union membership or employee association (don't know=no)
_jbcasab	Casual worker (ABS definition: no paid holiday leave, no paid sick leave)
_jbocct, _jbempt	Tenure (years): - in current occupation (years) - with current employer (years)
_wcpd[1], _wcapd[2]	Days of paid workers compensation in last 12 months: - total - absent from work
_alpd[1], _alsk[1], _alop[1], _alup[1]	Days if leave in last 12 months: - paid annual leave - paid sick leave - paid (maternity, paternity, bereavement, family, carers) leave - unpaid leave
_tatrwrk	Taken part in any work-related training in the past 12 months
_tatrcst	Contributed to cost of job-related training (fees/materials/books/paid for travel/took unpaid leave)
_tatrdsg, _tatrhgs, _tatrhsc, _tatrisc, _tatrmps, _tatrpfj, _tatros, _tatrdk, _tatrrf, _tatrna	Aim of this training - To develop your skills generally - To help you get started in your job - Because of health / safety concerns - To improve your skills in your current job - To maintain professional status and/or meet occupational standards - To prepare you for a job you might do in the future or to facilitate promotion - Other aims - Don't know - Refused - No answer
_jst	Weeks unemployed, missing if no exact duration
_ujlhruc	Hours per week worked in last job
_ujljws	Pay in last job per annum ($)
_ujljt	Tenure with last employer (years)
_molt	Months since did activity required by Centrelink/NP
ajbperm[3]	Permanently unable to work
bhgebi[4]	Household Form labour force status - broad [imputed]
bhgebf[4]	Imputation flag Household Form labour force status - broad
_jbmtabs[5]	DV: Trade Union membership - ABS defined (don't know=no)
bhgebi1 to bhgebi16	Household Form labour force status - broad [imputed]

Variable	*Description*
bhgebf1 to bhgebf16	Imputation flag Household Form labour force status - broad

[1] Wave 5 onwards.
[2] Wave 6 onwards.
[3] Wave 1 only
[4] Wave 2 only
[5] Wave 9 onwards

4.10 Calculating Hourly Wage Rates

The following is aimed at pointing you in the right direction if you want to calculate hourly wage rates. You would use the following derived variables:

- *_esbrd* Broad labour force status
- *_jbhruc* Combined hrs per week usually worked in all jobs
- *_wscei* Imputed current weekly gross wages & salary in all jobs

The hourly wage rate can be calculated in SPSS as follows:

if (aesbrd=1 and ajbhruc>0 and awscei>0) hwr01 = awscei/ajbhruc

if (besbrd=1 and bjbhruc>0 and bwscei>0) hwr02 = bwscei/bjbhruc

if (lesbrd=1 and ljbhruc>0 and lwscei>0) hwr12 = lwscei/ljbhruc

The above code calculates the hourly wage rate (across all their jobs) if the respondent:

(i) is employed;

(ii) has current wages and salaries; and

(iii) has usual hours worked in all jobs.

If you wish to look at those that are full and part time employed separately, use *_esdtl* (detailed labour force status) to define these groups. The cases that did not need to be imputed can be identified using the flag *_wscef* =0.

If you wish to look at the hourly wage in the respondent's main job, use *_wscmei* and *_jbmhruc*.

Please note that the questions about hours worked and income are asked in separate sections of the person questionnaire. As some respondents report low wages and salaries with high hours and vice versa, it is important that users are aware that there are some odd cases when deriving hourly wage rates. This is, unfortunately, unavoidable.

4.11 Employment and Education Calendar

The employment and education calendar contains over 1000 variables. Before you trawl through these variables and create your own summary variables, check if one of the derived calendar variables in Table 4.9 may help you. These derived variables typically relate to the financial year, while the calendar may stretch from 14 to 18 months, depending on the interview date.

Table 4.9: Derived employment and education calendar variables

Variable	*Description*
_capeft, _capept, _capj, _capune, _capnlf	Per cent time in last financial year spent in: - full-time education - part-time education - jobs - unemployed - not in the labour force
_cafnj	Number of jobs in last financial year
_cantp	Number of time periods answered in calendar

4.12 Family Relationships

The relationship grid on the Household Form collects the relationship of everyone in the household to everyone else. This information is then used to assign people to family groups and identify what relationship they hold within the family, what type of family and household they belong to based on the ABS Standards for Statistics on the Family.[14]

In overview, family type (*_hhfty*) is derived by first assigning a relationship in household (*_hhrih*) to each member. These individuals are collected into families and assigned a family number *(_hhfam*) and a hierarchical description of the family type (*_hhfty*). Household type (*_hhtype*) is then assigned based on the combination of family and non-family members within the household. Finally, income units (*_hhiu*) are assigned to subsets of the family thought to systematically pool their income and savings.

The core relationships that make a family are a couple relationship or a parent-child relationship. Others in the household are attached as appropriate to these core relationships to form families. *_hhrih* defines each person's relationship in the household with the following categories:

1. Couple with child under 15 – part of a married or defacto couple with at least one child under 15 in the household (they may also have other children which are dependent students or not dependent).

[14] ABS, Standards for Statistics on the Family (ABS Cat. No. 1286.0), ABS, Canberra, 1995.

2. Couple with dependent student (no child under 15) – part of a married or defacto couple with at least one child in the household who is a dependent student (they may also have other children which are not dependent). They do not have any children under 15 in the household.
3. Couple with non-dependent child (no child under 15 or dependent student) – part of a married or defacto couple with at least one child in the household who is not dependent. They do not have any children in the household who are under 15 or dependent students.
4. Couple without children – part of a married or defacto couple without children in the household.
5. Lone parent with child under 15 – a parent without a partner with at least one child under 15 in the household (they may also have other children which are dependent students or not dependent).
6. Lone parent with dependent student (no child under 15) – a parent without a partner with at least one child in the household who is a dependent student (they may also have other children which are not dependent). They do not have any children under 15 in the household.
7. Lone parent with non-dependent child (no child under 15 or dependent student) – a parent without a partner with at least one child in the household who is not dependent. They do not have any children who are under 15 or dependent students in the household.
8. Child under 15 – A child who is aged under 15.
9. Dependent student – A dependent student is aged 15 to 24, studying full-time, not working full time and lives in a household with their parent (natural, step, foster or adopted).[15] They do not have a partner or child of their own in the household (if they did, they would be classified as a couple or lone parent themselves).
10. Non-dependent child – A child who is at least 15 years of age living in a household with their parent (natural, step, foster or adopted) who does not fall into the category of a dependent student. They do not have a partner or child of their own in the household.
11. Other family member – A person who is not part of a couple or parent-child relationship, but is related to other members of the household.
12. Lone person – A single person household.
13. Unrelated to all household members – A person who is not related to any other members of the household.

There are several key points to note about how the families are defined when there are multiple ways to describe the relationship in the household:

- A couple relationship takes precedence over a parent-child relationship (see Figure 4.1). In a household with a mother, father, son and son's defacto, the son's couple relationship takes precedence over his

[15] Note that this definition of a dependent student is different to the full-time student identifier provided on the Responding Person File.

relationship to his parents. This household would be a multi-family household, with the mother and father as a couple in one family and the son and his defacto in another family.

- The most recent generation has precedence over an older generation and the older generation is then considered another relative. Figure 4.2 illustrates this case with only two people in the household. The core relationship is defined by the mother–daughter generation (Before Child). However, when the daughter has a daughter herself, that younger generation then takes precedence and forms the core relationship (After Child) and the original mother is considered to be a relative (a grandmother).
- When there are two ex-partners living together with their children, the mother and children are considered a lone parent family and the father is considered to be an 'other related' individual.
- Children aged under 15 living in a household without a natural, adopted, step or foster parent are attached to their closest relative. If they are without relatives, then they are attached to the person thought most likely to form a parent-child relationship with that child.

Figure 4.1: Family where a new defacto relationship is formed

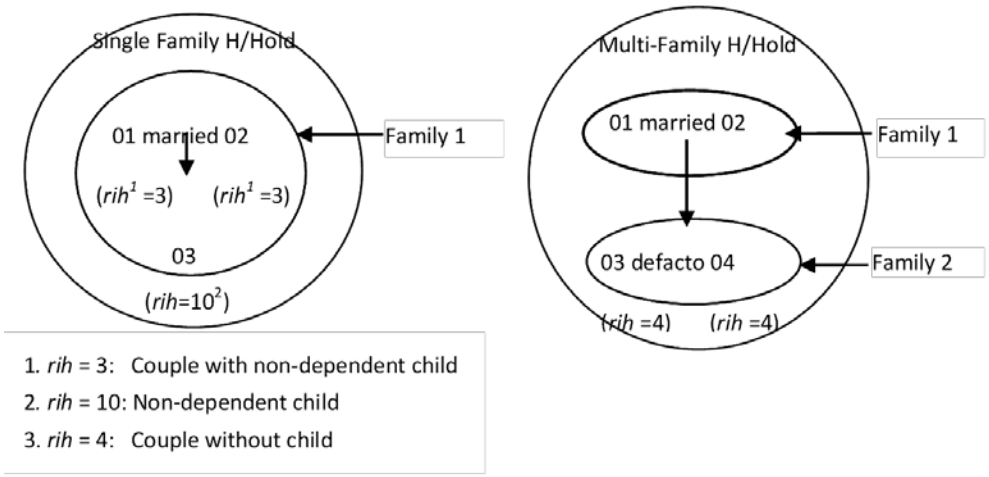
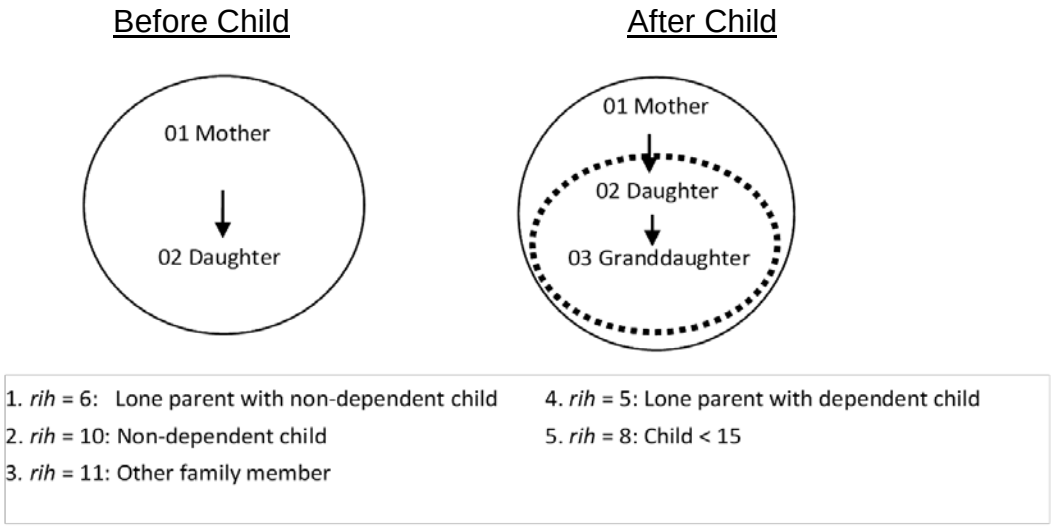
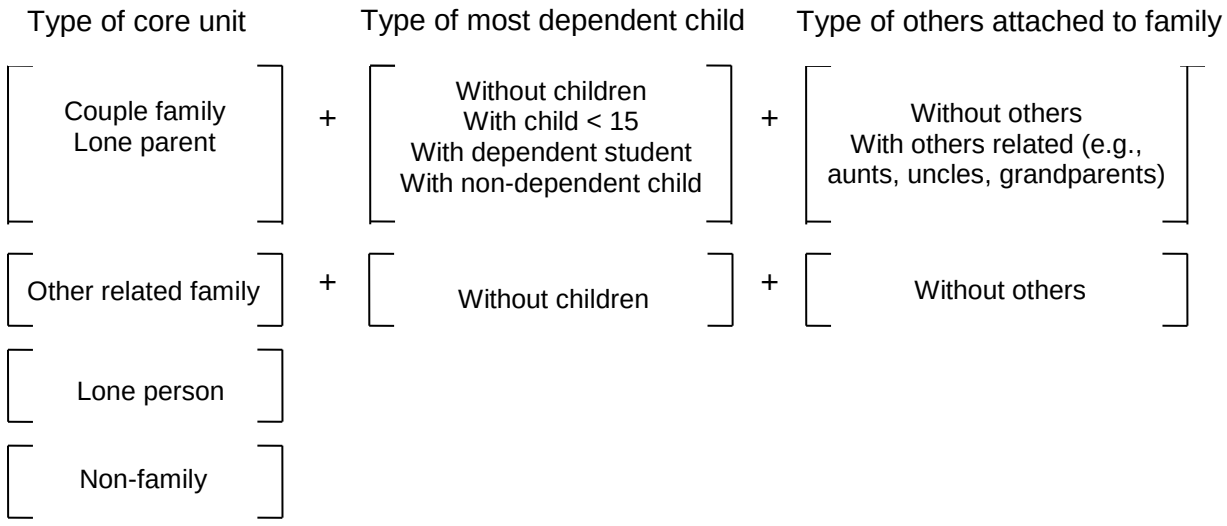


Figure 4.2: Family where a new child is born



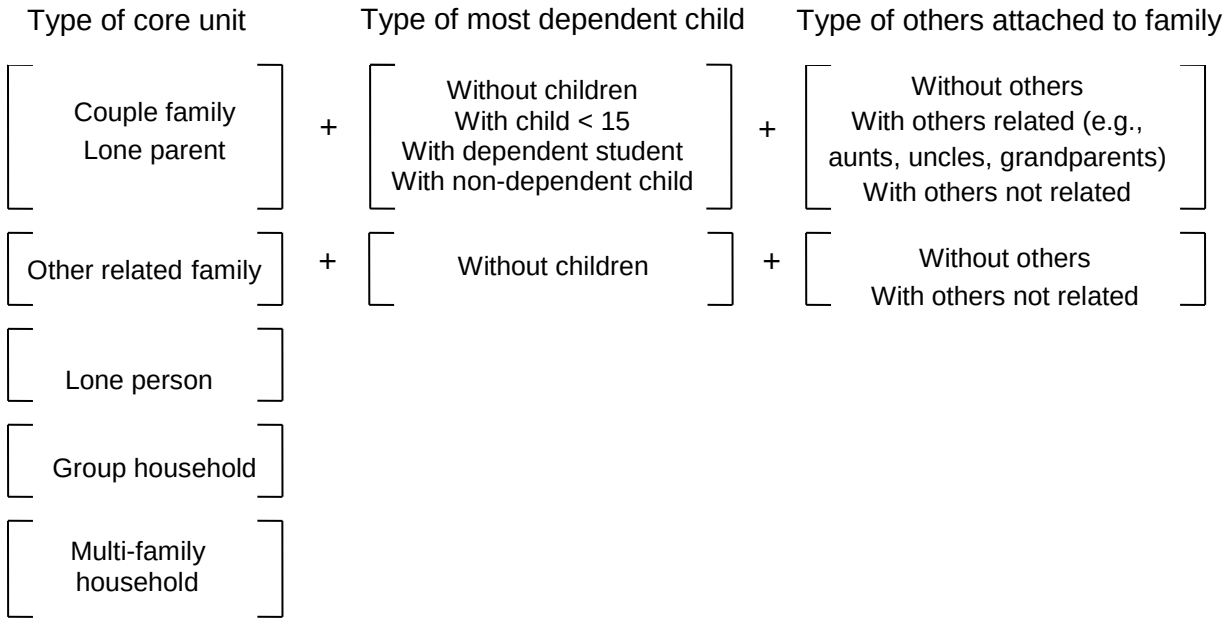
Once the relationships in the household have been classified, the individuals are formed into families, households and income units. The description for family type is constructed from three parts – the type of core relationship, the type of the most dependent child in the family, and who else is attached to the family (see Figure 4.3). For example, a couple family with a child under 15 and two non-dependent children without any other people in the household (related or unrelated) would be classified as a "couple family with children < 15 without others".

Figure 4.3: Construction of family type description



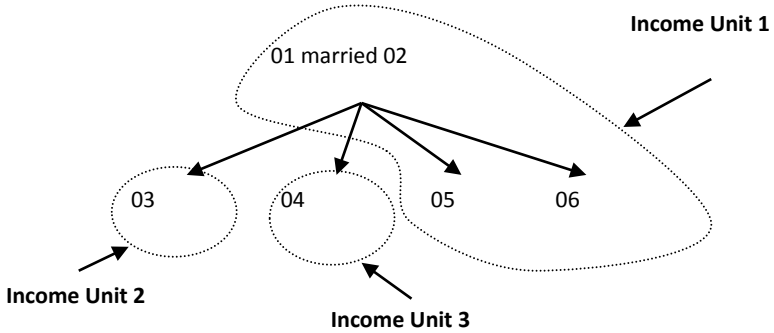
Similarly, the description of household type is made up of these three elements with the further allowance for others not related, group households and multi-family households (see Figure 4.4).

Figure 4.4: Construction of household type description



The income units are derived from the family units and separate out the non-dependent children and other related or non-related individuals from rest of the family. The family in Figure 4.5 is divided into 3 income units. The first income unit (1) includes mother, father, a dependent student and a child under 15. Each non-dependent child forms their own income unit (income units 2 and 3).

Figure 4.5: Income units in a family with child under 15, dependent student and non-dependent children



1. rih = 1: Couple with children < 15
2. *rih* = 10: Non-dependent child
3. *rih* = 9: Dependent student
4. *rih* = 8: Child < 15

Along with the variables based on the relationship grid, a number of other variables are listed in Table 4.10 including identifiers for various people in the household and counts of the number of people in certain age groups. The partner, father, mother and other biological relationship identifiers were discussed in Section 3.6.

Table 4.10: Derived family variables

Variable	*Description*
_hhtype	Household type
_hhrih[1]	Relationship in household
_hhfam[1]	Family number (which is zero for lone persons and unrelated individuals)
_hhfty[1]	Family type
_hhiu[1]	Income unit
_hhpxid, _hhfxid, _hhmxid, _hhbmxid, _hhbfxid, _hhtwxid, _hhmgmxd, _hhmgfxd, _hhpgmxd, _hhpgfxd	Crosswave person number (7-digit) of: - partner - father - mother - ever co-resident biological mother - ever co-resident biological father - ever co-resident twin - ever co-resident maternal grandmother - ever co-resident maternal grandfather - ever co-resident paternal grandmother - ever co-resident paternal grandfather
_hhprtid, _hhfid, _hhmid	2-digit person number within household of: - partner - father - mother
_hhyng, _hhold	Age of youngest and oldest person in household. Weighted topcode.
_hh0_4, _hh5_9, _hh10_14, _hhadult	Number of persons at June 30 aged: - 0-4 years - 5-9 years - 10-14 years - 15+ years
hhd0_4, hhd4_18[2], hhd5_9, hhd1014, hhd1524	Number of dependent children (including partner's children) at June 30 aged: - 0-4 years - 5-9 years - 10-14 years - 15-24 years

[1] On the Household File, these variables are listed for each person that is *_hhrih01* to *_hhrih16*, *_hhfam01* to *_hhfam16*, *_hhfty01* to *_hhfty16*, and *_hhiu01* to *_hhiu16*. (Note that variables for persons 13 and 14 are only included from wave 2 and person 15 and 16 are only included from wave 6.)

[2] Wave 9 only as required to calculate Australian Government Bonus payments.

4.13 Health

Each wave the SF-36 instrument is included within the Self-Completion Questionnaire. The SF-36 Health Survey is an internationally recognised diagnostic tool for assessing functional health status and well-being. It comprises 36 items which provide multi-item scales measuring each of eight distinct health concepts. Following the scoring rules outlined in Ware et al. (2000), each of these eight scales has been transformed into a 0-100 index. The individual scores for each of these indices have been provided as derived variables in the data set. In addition, the SF-

6D health state classification has also been derived from the SF-36 (as outlined in Brazier, Roberts and Deverill, 2002).

From wave 6, respondents are asked to record their height and weight in the Self-Completion Questionnaire. This is used to derive their body mass index. Further information on the quality of the height and weight data is provided in Wooden and Watson (2008). Self-reported waist measurement was collected in wave 13 (supplied tape measures).

Kessler-10 was asked for the first time in wave 7 (question B17 in the SCQ). A description of the associated derived variables is provided in Wooden (2009b).The derived health variables are listed in Table 4.11.

In wave 13, respondents were asked to record their waist circumference in the SCQ using the tape measure provided. In our editing process, we found that many respondents seemed to have provided their waist measurement in inches or were simply implausible (see Eisenmann (2005), Ford et al. (2012)). Please refer to the Subject Codebook for further information on the editing undertaken on this variable (_bmwaist).

Table 4.11: Derived health variables

Variable	*Description*
_ghpf, _ghrp, _ghbp, _ghgh, _ghvt, _ghsf, _ghre, _ghmh	SF-36 transformed: - physical functioning - role-physical - bodily pain - general health - vitality - social functioning - role-emotional - mental health
_ghrht	SF-36 reported health transitions - raw
_ghsf6d	SF-6D Health state Classification
_ghsf6ap , _ghsf6an	SF-6D Health state classification - Australian weights. By HILDA convention the value is the difference of the values >= 0.
_bmht[1]	Height in centimetres
_bmwt[1]	Weight in kilograms
_bmi[1]	Body Mass Index
_bmigp[1]	Body Mass Index group
_bmwhr[4]	Waist to height ratio
_pdk10s[3]	Kessler Psychological Distress Scale (K10) score
_pdk10rc[3]	Kessler Psychological Distress Scale (K10) risk categories

Variable	*Description*
_hcbwk1-10[2]	Birth weight (kg) – child 1-10
_hclbw1-10[2]	DV: Low birth weight - child 1-10 (aged < 15)
_hcgpc1-10[2]	Sees a particular GP or clinic if sick or needs health advice - child 1-10 (aged < 15)
_hcgpn1-10[2]	Number of doctor visits - child 1-10 (aged < 15)
_hchan1-10[2]	Number of hospital admissions - child 1-10 (aged < 15)
_hchnn1-10[2]	Number of nights in hospital - child 1-10 (aged < 15)
_hegpc[2]	Sees a particular GP or clinic if sick or needs health advice
_hegpn[2]	Number of doctor visits
_hehan[2]	Number of hospital admissions
_hehnn[2]	Number of nights in hospital
_helv10[2]	How likely that you will live to 75 or at least 10 more years

[1] From wave 6.
[2] Wave 9 & 13.
[3] Wave 7, 9, 11 & 13.
[4] Wave 13 only

4.14 Time Use

Table 4.12 lists derived time use variables which combine the hours and minutes spent in a week on various activities.

Table 4.12: Derived time use variables

Variable	*Description*
_lsemp, _lscom, _lserr, _lshw, _lsod, _lschd, _lsocd, _lsvol, _lscar	Combined hrs/mins per week - Paid employment - Travelling to/from paid employment - Household errands - Housework - Outdoor tasks - Playing with your children - Playing with other people's children - Volunteer/Charity work - Caring for disabled/elderly relative

4.15 Personality

In wave 5 respondents were questioned on their personality character traits using a 36-item inventory. The approach used was based on the trait descriptive adjectives approach used by Saucier (1994), which in turn was based on the approach employed by Goldberg (1992), both of which assume a 5-factor structure (as is commonly assumed in the literature). Not all 36 items, however, are used in the five

derived scales summarizing the 5 personality factors. First, the ex ante scales were tested for item reliability, with any items omitted if item total correlation was less than 0.3. Second, principal components analysis with a five factor solution was undertaken, with items only retained if their highest factor loading was on the expected factor, exceeded 0.4 and exceeded the second highest factor loading by at least 0.1. A slightly different approach to derivation of these scales, but which obtains identical conclusions, is provided in Losoncz (2009).

The five scales based on the Big Five are listed in Table 4.13 below. These scales are composed by taking the average of the following items:

- Extroversion – talkative, bashful (reversed), quiet (reversed), shy (reversed), lively, and extroverted.
- Agreeableness - sympathetic, kind, cooperative, and warm.
- Conscientiousness - orderly, systematic, inefficient (reversed), sloppy (reversed), disorganised (reversed), and efficient.
- Emotional stability - envious (reversed), moody (reversed), touchy (reversed), jealous (reversed), temperamental (reversed), and fretful (reversed).
- Openness to experience - deep, philosophical, creative, intellectual, complex, imaginative.

The higher the score, the better that personality character trait describes the respondent.

The items and derived scales were repeated in wave 9 and wave 13.

Table 4.13: Derived personality variables

Variable	*Description*
_pnextrv[1], _pnagree[1], _pnconsc[1], _pnemote[1], _pnopene[1]	Personality scale - Extroversion - Agreeableness - Conscientiousness - Emotional stability - Openness to experience

[1] Waves 5, 9 & 13 only

4.16 Religion

In waves 4, 7, 10 and 14, respondents were asked about their religion. *_religb* describes their broad religion classification (using the Australian Standard Classification of Religious Groups 1996).

4.17 Cognitive Ability Tasks

In wave 12 respondents were asked to undertake one or more cognitive ability tests. All respondents (face-to-face and telephone interviews) were asked to undertake the

Backwards digit span, a generic test of working memory span. If the interview was face-to-face, two further tests were undertaken, the symbol-digits modalities test and a shortened (25-item) version of the National American Reading Test. For the test sources see Appendix 1b. For further information about the three cognitive ability tasks, their development and their properties, see Wooden (2013).

Table 4.14: Cognitive Ability Scores

Variable	*Description*
lctbds	Backwards digits score
lctwps	Word pronunciation score (25-item NART)
lctsds	Symbol-digit modalities score

4.18 Physical Activity and Sleep

In wave 13 respondents were asked about the time spent in vigorous physical activity, moderate physical activities and time spent walking. They were also asked about hours of sleep on workday nights and on non-work nights. For further information about these measures, see Wooden (2014).

Table 4.15: Physical activity and sleep variables

Variable	*Description*
mapvigd	Vigorous Physical Activity - Minutes per day
mapvigw	Vigorous Physical Activity - Minutes per week
mapmodd	Moderate Physical Activity - Minutes per day
mapmodw	Moderate Physical Activity - Minutes per week
mapwlkd	Walking - Minutes per day
mapwlkw	Walking - Minutes per week
maptmet	Total physical activity MET (Metabolic Equivalent of Task) - Minutes per week (IPAQ)
mapcat	Categorical Physical Activity
mslhrwk	Hours of sleep per week

4.19 Death

In 2014 the sample was matched to the National Death Index so that details of the date and cause of death could be added to the data files. For cases deemed to have a suitable match, their household and interview outcomes were updated. More details of the death matching is provided in Watson and Summerfield (2014).

The table below lists the new variables that have been added to the master file.

Table 4.16: Death variables

Variable	*Description*
yodeath	DV: Year of death [inc. match to National Death Index (NDI) (2014)]
dodeath[1]	DV: Date of death [inc. match to National Death Index (NDI) (2014)] dd/mm/yyyy
lcdeath[1]	DV: Leading cause of death [match to National Death Index (NDI) (2014)]
mcdeath[1]	DV: Major cause of death (major ICD-10 chapters) [match to National Death Index (NDI) (2014)]
lsdeath	DV: Information source for death
aadeath	DV: Age at death

[1] Variables are only on the unconfidentialised Release files.

Note: The date of death (*dod*) provided in previous releases has been deleted from Release 13.

4.20 Income

4.20.1 Income, Tax and Family Benefits Model

A great deal of income information is collected in the Person Questionnaire every wave, most of which relates to the completed financial year immediately preceding the date of interview (for example, 2000-2001 in wave 1). This information is used to construct a number of variables for financial year income components, which are presented in Figure 4.6, Figure 4.7 and Figure 4.8 for the household file, enumerated person file and responding person file, respectively. In addition, there are several other income components shown in these figures that are calculated by HILDA staff based on the circumstances of sample members. The figures also show how all of the income components are combined together to produce more aggregated income components, such as 'market income', and to produce disposable income (total income after receipt of government benefits and deduction of income tax).

Here we provide an overview of how the derived income variables are produced. For full details, see Wilkins (2014).

Derived variables for Australian Government benefits are also provided which reflect the structure of the benefit system. These derived variables comprise:

- Australian Government income support payments, which are further disaggregated into
  - Pensions,
  - Parenting Payments, and
  - Allowances;

- Australian Government non-income support payments, which are further disaggregated into:
    - Family payments (estimated as described below), and
    - Other non-income support payments;
    - Other domestic government and Australian Government benefits with not enough information to allow classification; and
    - Other regular public payments (including scholarships).

Respondents are not asked to report the family payments Family Tax Benefit Part A, Family Tax Benefit Part B, Maternity Allowance (paid up to and including 2003-04) and Maternity Payment (paid from 2004-05 to 2006-07). These are instead calculated based on eligibility criteria and payment rates (inclusive of Commonwealth Rent Assistance) and added to the other income components to produce total financial year income. Full details on the calculation of these government benefits are available in Wilkins (2014).

Until wave 8, Baby Bonus payments were not obtained from respondents; instead, they were calculated, since the payment was universal and a lump sum. From 1 January 2009 until its abolition on 1 April 2014, the Baby Bonus was subject to an income test and was paid in 13 fortnightly installments. As a result, in waves 9 to 14, respondents were asked to report Baby Bonus payments received in the current week (up until wave 13 only) and in the previous financial year. This resulted in a new variable for current Baby Bonus payments in waves 9 to 13.

For the previous financial year, while respondents were asked to report Baby Bonus payments, due to apparent under-reporting and non-reporting of amounts, we continued to estimate them based on date of birth of the child(ren), eligibility rules and payment rates. Note that the income test was based on income in the 6 months following the birth of the child, which is not available in the HILDA data, and so was approximated as equal to 50% of the mother's partner's annual income plus 10% of the mother's annual income.

In the 2008-2009 and 2011-12 financial years, various 'bonus' payments were made by the federal government. While respondents are asked to report these payments, the values reported in the HILDA Survey data are derived for each enumerated person from calculations based on eligibility criteria and payment rates. They are aggregated into the variable *_bnfboni*[16] (enumerated person file) and are a component of Australian public transfers (*_bnfapti*). Note that the bonus payments are all non-taxable.

In addition to financial-year income information, the HILDA Survey also obtains from respondents current (survey reference week) wage and salary income and current

[16] Wave 9 only

government benefit income. No attempt is made to collect other income components for the survey reference week. Correspondingly, current aggregated income variables, including current disposable income, are not produced.

Each of the income components presented in Figure 4.7 and Figure 4.8 has been imputed for both respondents and non-respondents within responding households. The enumerated file, as a result, contains component level data (rather than just total financial year income and windfall income as occurred in earlier releases). This has also permitted the calculation of these components at the household level, as detailed in Figure 4.6.

From Release 12, the income model was has been modified to include 'irregular' income components as part of total income. Previously, these components were excluded from total income. However, total 'regular' income variables have been preserved which are constructed in the same way as total income in previous releases. Full details of the changes to the income model are provided in Wilkins (2014).

In order to produce the disposable income variable, an income tax model is applied to each sample member that calculates the financial-year tax typically payable for a permanent resident taxpayer in the circumstances akin to those of the respondent. The information collected in the HILDA Survey does not permit accounting for every individual variation in tax available under the Australian taxation system, but most major sources of variation are accounted for. When aggregated, income tax estimates from HILDA compare favourably with national aggregates produced by the Australian Taxation Office (ATO) (once tax on realised capital gains, which are not measured by the HILDA survey, is excluded).

Following is an outline of the method by which taxes are estimated:

(i) The input data are the imputed income variables and the data collected in the personal questionnaire. The components which the ATO treats as taxable income are summed: wages and salaries, business income, investment income, private pensions and taxable Australian public transfers. Special tax rates apply to superannuation benefits, which are therefore excluded from 'regular taxable income'. (Estimated tax on superannuation benefits is described at Point viii below.) Taxable public transfers are obtained by subtracting from public transfer income Family Tax Benefit Parts A and B, Maternity Allowance, Maternity Payment, the Disability Support Pension and estimated Rent Assistance, none of which are taxable. From Wave 10, wage and salary earners have been asked to report salary sacrificed income, and to indicate whether they included it in their reported wage and salary income. For respondents who included the salary sacrificed income, it is subtracted from reported wage and salary income to obtain taxable wage and salary income. For respondents who did not include the salary sacrificed income, taxable wage and salary income is as reported (but *gross* wage and salary income, and hence gross income, are increased by the value of the

salary sacrificed income). For waves prior to wave 10, all employees are assumed to receive 0.5% of wage and salary income as salary sacrificed income – that is, 99.5% of wage and salary income is included in taxable income.

(ii) Tax deductions (for example, for work-related expenses) are assumed to be a fixed percentage of gross income that depends on the level of the individual's gross income. ATO data on deductions as a proportion of income for each of 20 income ranges (reported in *Taxation Statistics*, which has been produced for each financial year spanned by HILDA up to 2007-2008) are used to determine the applicable percentage. That is, the proportion of gross income that is assumed to be claimed as a tax deduction depends on which income category the individual falls. Average deductions for each income category range from 6 per cent for those with low incomes down to 4 per cent for those with the highest incomes. Estimated deductions are subtracted from the total income obtained at Step 1 above to obtain 'regular' taxable income excluding dividend imputation credits.

(iii) Dividend imputation credits, which are tax credits received by share-dividend recipients, are estimated as equal to 41% of share-dividend income (based on ATO Taxation Statistics). These are added to the income calculated at Step 2 to obtain 'regular' taxable income including dividend imputation credits.

(iv) The standard marginal income tax rates are applied to the 'regular' taxable income estimate obtained at Step 3. This produces an initial estimated income tax liability.

(v) The Medicare Levy is estimated as per the formulas applicable in the relevant financial year. The levy is 1.5 per cent of taxable income if the individual has an income that exceeds the applicable threshold (which depends on the year, family situation, age and whether they are a pensioner or not). Prior to wave 12, the HILDA Survey did not collect private health insurance status (except in waves 4 and 9), so the Medicare Levy surcharge (MLS) was assumed to be zero for all respondents. From wave 12, this information is obtained, allowing estimation of the MLS.

(vi) Applicable tax offsets are estimated. The Low Income Tax Offset (LITO), Senior Australians Tax Offset (SATO), Pensioner Tax Offset (PETO), Mature Age Workers Tax Offset (MATO) and Dependent Spouse Tax Offset (SPOUTO) are calculated as applicable. Dividend imputation (or franking) credits are estimated to be 40% of reported dividends from shares (*_oifdiva*). All other offsets are estimated based on ATO data on their mean value as a proportion of taxable income by level of taxable income (typically ranging from 0.2% to 0.8% of taxable income).

(vii) Total income tax is calculated as the sum of income tax (Step 4) and the Medicare Levy (Step 5), less offsets (Step 6) and dividend imputation credits (Step 3).

(viii) Special taxation rates apply to superannuation benefits, depending on the how the benefit is classified, the amount of the benefit and the age of

the recipient. HILDA Survey estimates of tax on superannuation benefits assume benefits are lump sums with a ‘taxed’ status. Up until 2006-07, for those aged 60 years and over, no tax was payable on the first $100,696 of ‘taxed’ lump sum benefits, and a tax rate of 15% applied to benefits in excess of $100,696. Since 2007-08, no tax has been payable on ‘taxed’ lump sum superannuation benefits for people aged 60 years and over. For those aged under 60, tax rates depend on the amount of the benefit and whether the recipient is below the ‘preservation age’ (55 until 2015-16, when it will begin increasing up to 60 by 2024-25).

(ix) Taxes on redundancy payments are estimated, and tax on total (regular plus irregular) income is calculated by adding taxes on redundancy payments to taxes calculated in Steps 1 to 8.

Figure 4.6: Financial year income model (household-level)

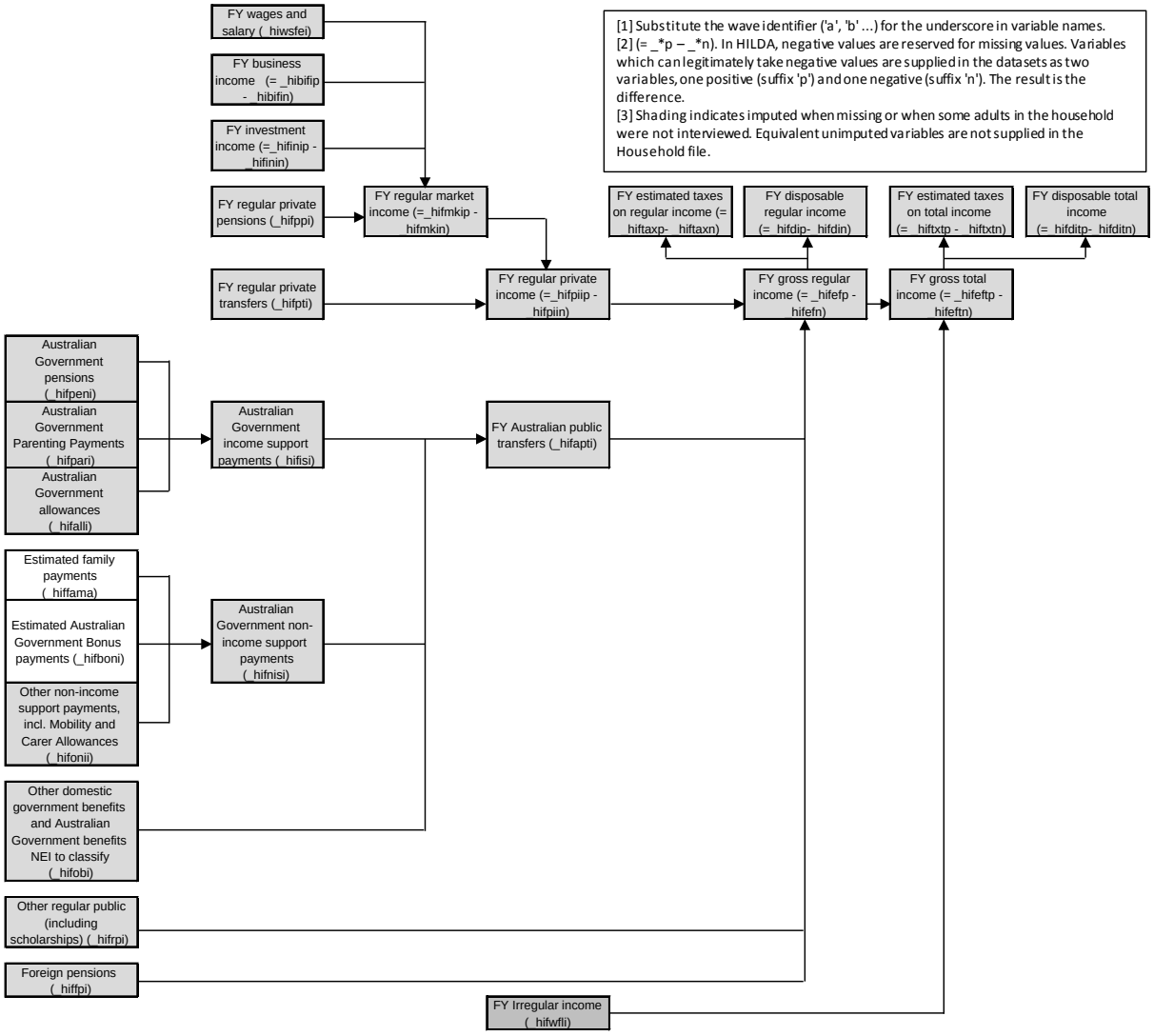


Figure 4.7: Financial year income model (enumerated person-level)

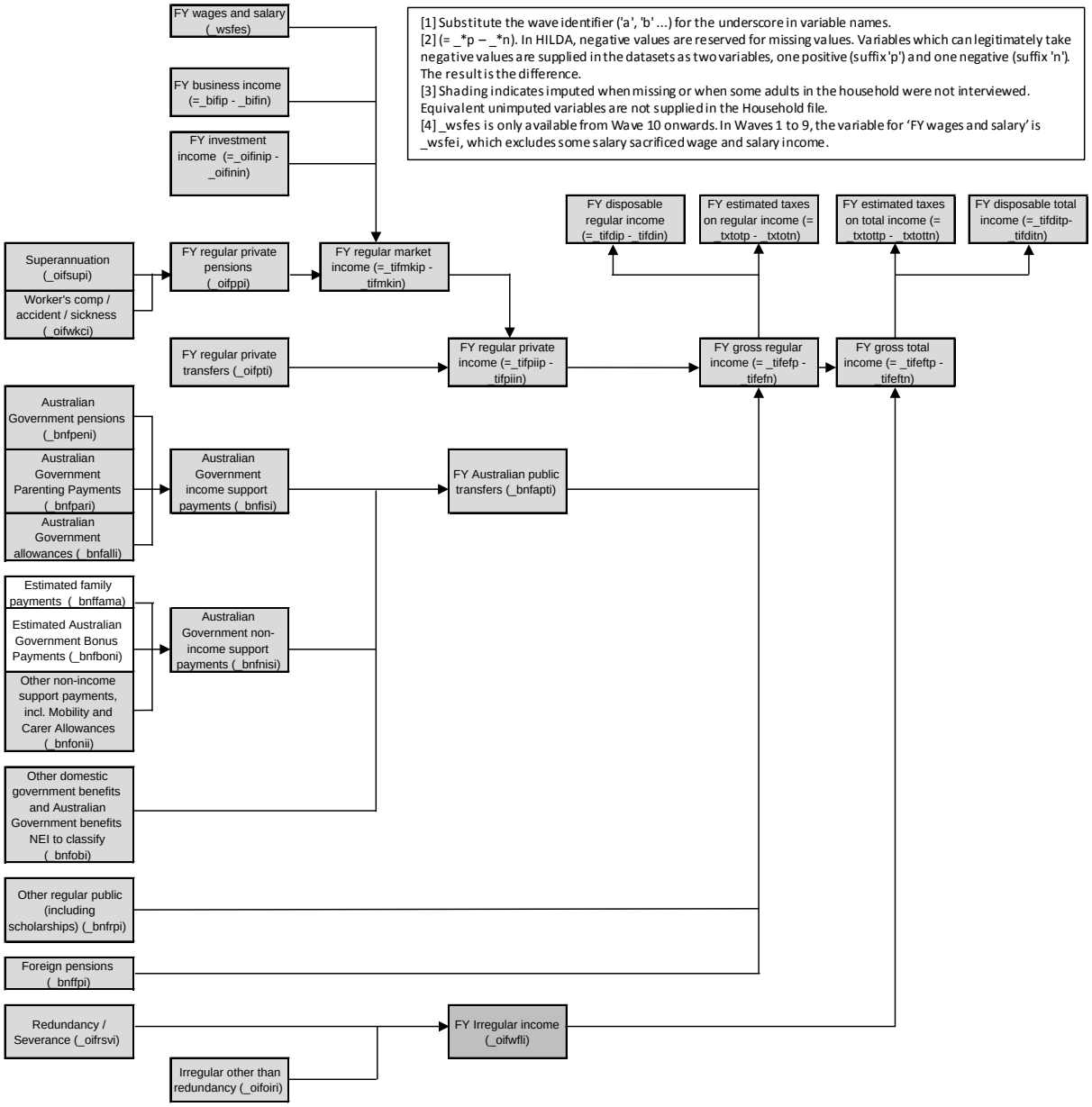
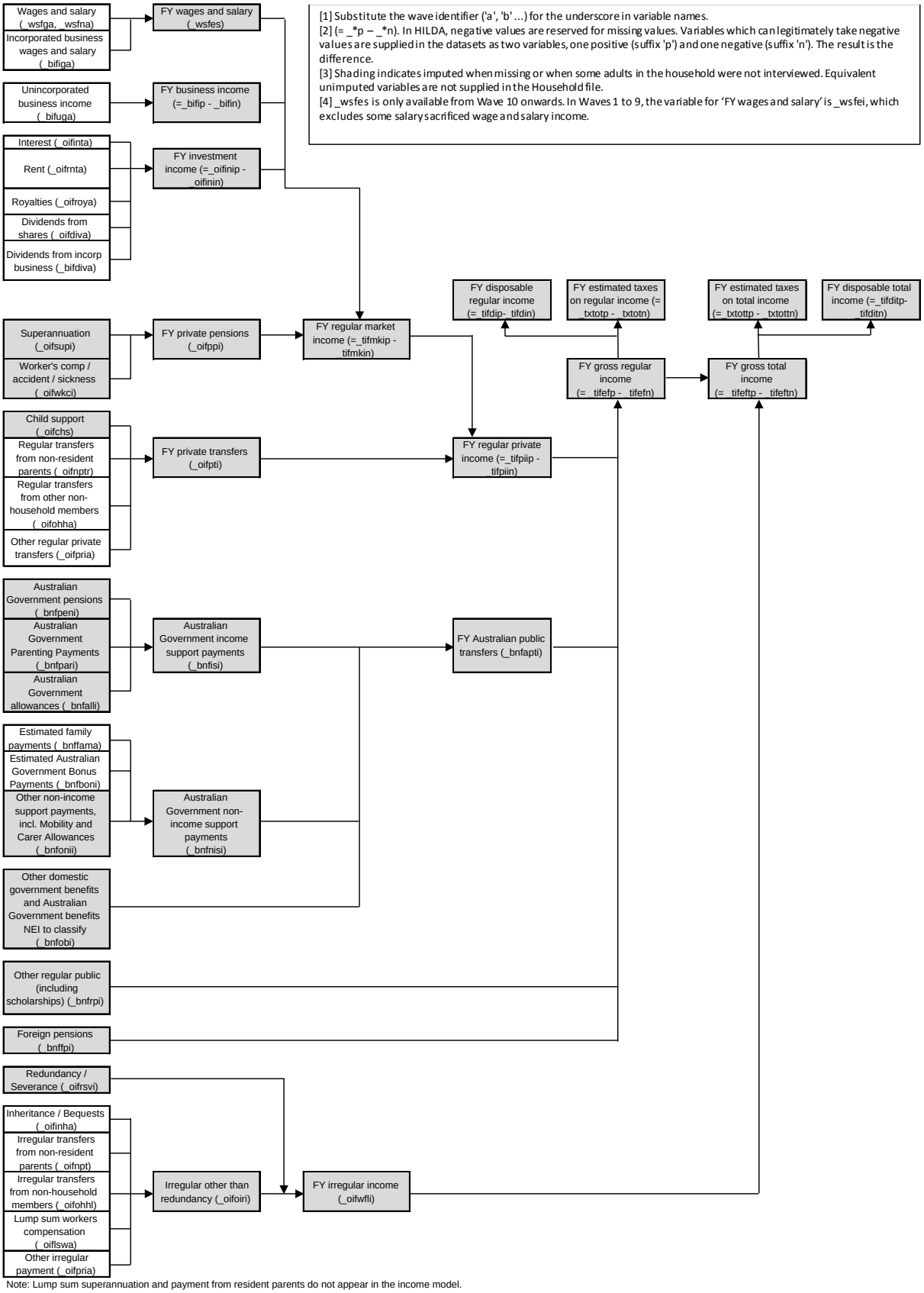


Figure 4.8: Financial year income model (responding-level)



Note: Lump sum superannuation and payment from resident parents do not appear in the income model.

Additional derived income variables are provided in Table 4.17 and Table 4.19, the latter containing variables directly related to the income imputation. There are several issues to take note of in Table 4.17:

- Wages and salaries were asked of respondents for their main job, then for all their other jobs combined. The suffix ‘g’ and ‘e’ refer to gross and estimated gross incomes – where the respondent didn’t know their gross income, their after tax income was asked for and this was translated back into an estimated gross income. The ‘e’ variables will have fewer cases with missing wages and salaries than the ‘g’ variables, as the ‘e’ variables include all the known ‘g’ values.
- The variable labels indicate when top-coding has occurred. The actual value replacing the top-coded value will be the weighted mean of the top-coded units (see Section 3.12 on Confidentialisation).
- Child support is calculated from the questions asked about the children in the family formation grid, rather than from the single category listed in the ‘other income’ question in the income section. This is because it is more likely the respondent would provide a more accurate response to the detailed questions rather than the broad ‘catch all’ question.
- The components of ‘irregular’ income include inheritances, redundancies, irregular payments from parents, lump sum superannuation payouts and lump sum workers compensation payouts.
- In wave 1, respondents were asked how different their current wage and salary income was from one year ago. This has been provided in dollar terms in *awsly*.

The imputation method and derived variables are discussed in the following sections.

Table 4.17: Other derived income variables

Variable	*Description*
Current wages and salaries and current benefits – person-level	
_wscg, _wscmg, _wscog	Current gross wages per week ($), weighted topcode[1] [3] - All jobs - Main job - Other jobs
_bncis, _bncisi, _bncisf,	Current weekly Gov’t pensions and benefits (pre-imputed, post-imputed, flag)
_bncapu, _bncapui, _bncapuf	Current weekly Gov’t transfers (pre-imputed, post-imputed, flag)
Financial year income – unimputed variables – person-level	
awsly[2]	Gross weekly current wages & salary (from all jobs) one year ago ($)

Variable	*Description*
_wsfg, _oiint, _oirntp, _oirntn, _oidiv, _oiroy, _oidvry, _tifmktp, _tifmktn, _tifprip, _tifprin	Financial year income ($): - gross wages & salary (weighted topcode[1])[3] - interest - rental income (positive and negative) - dividends - royalties - dividends plus royalties - market income (positive and negative, weighted topcode[1]) - private income (positive and negative, weighted topcode[1])
Current wages and salaries and current benefits – household-level	
_hicisi, _hicisf, _hicnisi, _hicnisf, _hicapi,_ hicapf	Current weekly Government pensions and benefits (post-imputed, flag), Current weekly Government non-income support payments (post-imputed, flag), Current weekly Government transfers (post-imputed, flag)
Financial year income – estimated FTB A, FTB B, and Maternity payments – person-level	
_bnfftba	Family Tax Benefit Part A ($) financial year
_bnfftbb	Family Tax Benefit Part B ($) financial year
_bnfmat	Maternity Payments ($) financial year
_phlfyi, _phlfyf	Covered by private patient hospital (insurance) cover for the whole of last year (post-imputed, flag)
Financial year income – estimated FTB A, FTB B, income tax and Medicare levy – household-level	
_bnftaf1, _bnftaf2, _bnftaf3	Family Tax Benefit Part A ($) for financial year for family number 1, 2 and 3
_bnftbf1, _bnftbf2, _bnftbf3	Family Tax Benefit Part B ($) for financial year for family number 1, 2 and 3
_hifftb	Household Family Tax Benefit (FTB-A and FTB-B) ($) financial year
_bnmatf1, _bnmatf2, _bnmatf3	Maternity Payments ($) for financial year for family number 1, 2 and 3
_hifmat	Household Maternity Payments [Baby Bonus] ($) financial year
_hiffama	Household Australian Government family payments
Salary sacrifice and non-cash benefit – current and financial year – person level[4]	
_sscmrei, _sscmref	Salary sacrifice reported earlier - current main job [imputed] (post-imputed, flag)
_sscorei, _sscoref	Salary sacrifice reported earlier - current other jobs [imputed] (post-imputed, flag)
_ssfarei, _ssfaref	Salary sacrifice reported earlier - financial year [imputed] (post-imputed, flag)
_wscmes	Current weekly gross wages & salary - main job ($) [imputed][inc. salary sacrifice] (post-imputed)
_wscoes	Current weekly gross wages & salary - other jobs ($) [imputed][inc. salary sacrifice] (post-imputed)

Variable	*Description*
_wsces	Current weekly gross wages & salary - all jobs ($) [imputed][inc. salary sacrifice] (post-imputed)
_wsfes	Financial year gross wages & salary ($) [imputed][inc salary sacrifice]
Salary sacrifice and non-cash benefit – current and financial year – household level4	
_hiwscms, _hisscmf	Household current weekly gross wages & salary including salary sacrifice - main job (post-imputed, flag)
_hiwscos, _hisscof	Household current weekly gross wages & salary including salary sacrifice - other jobs (post-imputed, flag)
_hiwsces	Household current weekly gross wages & salary - all jobs ($) [imputed][inc salary sacrifice]
Australian Government Bonus Payments	
ibnfbtsa[5]	2009 Back to School Bonus Part A if parent ($) [estimated]
ibnfbtsb[5]	2009 Back to School Bonus Part B if child on DSP or Carer's payment ($) [estimated]
ibnfeep[5]	2009 Temporary supplement to the Education Entry Payment ($) [estimated]
ibnffam[5]	2008 Bonus payment for families ($) [estimated]
ibnffh[5]	2009 Farmers Hardship Bonus ($) [estimated]
ibnfpens[5]	2008 Bonus payment for pensioners, seniors, people with disability, carers and veterans ($) [estimated]
ibnfsif[5]	2009 Single Income Family Bonus ($) [estimated]
ibnftal[5]	2009 Training and Learning Bonus ($) [estimated]
ibnftb[5]	2009 Tax bonus for Working Australians ($) [estimated]
lbnfceap[6]	2012 Bonus payment - Clean Energy Advance Payments ($)[estimated]
lbnfskb[6]	2012 Bonus payment - School Kids Bonus ($) [estimated]
_bnfbon, _bnfboni, _bnfnonf	Australian governemtn bonus payments – Total bonuses ($) [estimated])pre-imputed, post-imputed, flag)[7]

[1] See Section 3.12 on Confidentialisation for explanation of top-coding.
[2] Wave 1 only.
[3] These variables are as calculated from reported wage and salary income and may include salary sacrifice income. They are consistently measured across waves 1-11.
[4] From wave 10.
[5] Wave 9 only.
[6] Wave 12 only.
[7] Wave 9 & 12 only.

4.20.2 Imputation Method

The imputation methods used in the HILDA Survey, to varying extents, are:

- Nearest Neighbour Regression method;
- Little and Su method;
- Population Carryover method; and

- Hotdeck method.

The particular combination of methods adopted for the imputation of income data resulted from a detailed study undertaken by Watson and Starick (2011) and employs the first three of these four methods.

The imputation steps for each income variable are as follows:

- Step 1 – Carryover of zeros. For non-responding persons (in responding households), the income amounts are determined to be zero or non-zero by carrying forward or backward this information from the surrounding waves with the same probability as that observed in complete cases.
- Step 2 – Nearest Neighbour Regression imputation. The predicted values from a regression model are used to identify a donor from which the reported value is taken as the imputed value for the recipient. For non-respondents, a single donor for all income components is used and the zero or non-zero determination from step 1 is observed.
- Step 3 – Little and Su imputation. This method incorporates (via a multiplicative model) the trend across waves (column effect), the recipient's departure from the trend (row effect), and a residual effect donated from another respondent with complete income information for that component (residual effect). Wherever possible, the Little and Su imputation replaces the Nearest Neighbour Regression imputation. The zero or non-zero determination from step 1 is observed.

Imputation classes are used for some variables to ensure the donors and recipients match on a small number of characteristics.[17] Total income is the sum of the imputed components.

A full description of the imputation process for the income variables is provided by Hayes and Watson (2009). Appendix 2 provides an extract from this paper which details the Population Carryover method, Nearest Neighbour Regression method and Little and Su method.

Table 4.18 shows the percentage of missing cases that were imputed by each imputation method (for the proportion of cases which are missing, see Table 6.2. The percentages are summarized across all income variables that have been imputed. Ideally all records would be imputed by the Little and Su method, however sufficient information is not always available (especially for non-respondents within responding households).

With additional waves of income data and improvements to the imputation methodology, the imputed values will change from Release to Release.

[17] From Release 11, we added a restriction for non-respondents that donors match the full-time, part-time, or not employed status of the recipients in the Nearest Neighbour Regression method and that the Little and Su imputed amounts match the zero/non-zero pattern imputed by the Nearest Neighbour Regression method. From Release 12, the Little and Su imputes were restricted to fall within the observed ranges of reported values.

Table 4.18: Percentage of missing cases imputed by imputation method (income), waves 1 - 14

	Wave													
Imputation method	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11**	*12*	*13*	*14*
Responding Persons														
Nearest Neighbour	12.4	3.7	3.5	3.7	3.7	3.5	3.7	3.0	4.7	5.8	7.6	6.1	8.0	11.5
Little & Su	78.6	96.3	96.5	96.3	96.3	96.5	96.3	97.0	95.3	94.2	92.4	93.9	92.0	88.5
Enumerated Persons														
Nearest Neighbour	65.2	48.0	52.4	50.0	53.4	55.8	55.3	48.2	53.2	52.0	59.0	56.3	58.6	69.1
Little & Su	18.9	21.2	21.8	19.5	23.0	23.9	24.5	24.8	28.1	26.8	24.5	23.9	22.7	22.7
Carryover	15.8	30.7	25.8	30.5	23.6	20.2	20.2	27.0	18.7	21.1	16.5	19.8	18.7	8.2

* A top-up sample was added in Wave 11.

In wave 9, certain stimulus payments were imputed (via the Nearest Neighbour Regression method) for those whom receipt of such payments could not be determined from their financial and family situation. This imputation occurred for:

- the bonus payment for training and learning, the temporary supplement to the Education Entry Payment, and the farmers hardship bonus (both for respondents and for non-respondents in responding households); and
- the bonus payment for pensions, seniors, people with disabilities, carers and veterans (for non-respondents in responding households).

The questions on salary sacrifice and non-cash benefit variables (introduced in wave 10) were also imputed. Two methods were used. The Little and Su method or (failing that) the Nearest Neighbour Regression was used to impute the amount of salary sacrificed or the amount of non-cash benefits. The Nearest Neighbour Regression method (using logistic regression) was used to impute whether someone included these amounts in their report of wages and salaries. This imputation was undertaken for a person's main job held currently, other jobs held current, and together for all jobs held in the last financial year. From wave 12, an indicator variable for whether the person was covered by private health insurance was also imputed via the nearest neighbour method (as this was required for the tax model).

4.20.3 Imputed Income Variables

All income imputation was undertaken at the derived variable level, leaving the original data unchanged. Generally, both the pre-imputed and post-imputed variables are available in the datasets, along with an imputation flag, so that it is easy to choose between using the pre-imputed data or the post-imputed data.

An overview of the pre- and post-imputed income variables is provided in Table 4.19.

Table 4.19: Imputed income variables

	Pre-imputed	*Post-imputed*	*Flag*
Responding person file			
Current income			
Wages and salaries – all jobs	_wsce	_wscei	_wscef
Wages and salaries – main job	_wscme	_wscmei	_wscmef
Wages and salaries – other jobs	_wscoe	_wscoei	_wscoef
Salary sacrifice – main job[1]	_sscm	_sscmi	_sscmf
Salary sacrifice – other jobs[1]	_ssco	_sscoi	_sscof
Non-cash benefits – main job[1]	_nbcm	_nbcmi	_nbcmf
Non-cash benefits – other jobs[1]	_nbco	_nbcoi	_nbcof
Australian Government pension	_bncpen	_bncpeni	_bncpenf
Australian Government parenting payment	_bncpar	_bncpari	_bncparf
Australian Government allowances	_bncall	_bncalli	_bncallf
Non-income support other than family payment	_bnconi	_bnconii	_bnconif
Other domestic Government benefits and Australian Government NEI to classify	_bncob	_bncobi	_bncobf
Financial year income			
Wages and salaries	_wsfe	_wsfei	_wsfef
Salary sacrifice[1]	_ssfa	_ssfai	_ssfaf
Non-cash benefits[1]	_nbfa	_nbfai	_nbfaf
Australian Government pension	_bnfpen	_bnfpeni	_bnfpenf
Australian Government parenting payment	_bnfpar	_bnfpari	_bnfparf
Australian Government allowances	_bnfall	_bnfalli	_bnfallf
Australian Governments Bonus payments	_bnfbon	_bnfboni	_ bnfbonf
Australian Government income support payments	_bnfis	_bnfisi	_bnfisf
Australian Government non-income support payments	_bnfnis	_bnfnisi	_bnfnisf
Australian public transfers	-	_bnfapti	_bnfaptf

	Pre-imputed	*Post-imputed*	*Flag*
Non-income support other than family payment	_bnfoni	_bnfonii	_bnfonif
Other regular public payments	_bnfrp	_bnfrpi	_bnfrpf
Other domestic Government benefits and Australian Government NEI to classify	_bnfob	_bnfobi	_bnfobf
Foreign Government pensions	_bnffp	_bnffpi	_bnffpf
Business income	_bifp, _bifn	_bifip, _bifin	_biff
Investments	_oifinvp, _oifinvn	_oifinip,_oifinin	_oifinf
Regular private pensions	_oifpp	_oifppi	_oifppf
Regular superannuation / annuity	_oifsupa	_oifsupi	_oifsupf
Regular workers compensation insurance	_oifwkca	_oifwkci	_oifwkcf
Regular private transfers	_oifpt	_oifpti	_oifptf
Gross regular income[2]	-	_tifefp, _tifefn	_tifeff
Gross total income	-	_tifeftp, _tifeftn	_tifeftf
Redundancy and severance payments	_oifrsva	_oifrsvi	_oifrsvf
Irregular income other than redundancy	_oifoira	_oifoiri	_oifoirf
Regular market income	-	_tifmkip, _tifmkin	_tifmktf
Regular private income	-	_tifpiip, _tifpiin	_tifpif
Disposable regular income	-	_tifdip, _tifdin	_tifdif
Disposable total income	-	_tifditp, _tifditn	_tifditf
Irregular income	_oifwfl	_oifwfli	_oifwflf
Enumerated person file			
Current income			
Wages and salaries – all jobs	-	_wscei	_wscef
Wages and salaries – main job	-	_wscmei	_wscmef
Wages and salaries – other jobs	-	_wscoei	_wscoef
Salary sacrifice – main job[1]	-	_sscmi	_sscmf
Salary sacrifice – other jobs[1]	-	_sscoi	_sscof

	Pre-imputed	*Post-imputed*	*Flag*
Non-cash benefits – main job[1]	-	_nbcmi	_nbcmf
Non-cash benefits – other jobs[1]	-	_nbcoi	_nbcof
Australian Government pension	-	_bncpeni	_bncpenf
Australian Government parenting payment	-	_bncpari	_bncparf
Australian Government allowances	-	_bncalli	_bncallf
Non-income support other than family payment	-	_bnconii	_bnconif
Other domestic Government benefits and Australian Government NEI to classify	-	_bncobi	_bncobf
Financial year income			
Wages and salaries	-	_wsfei	_wsfef
Salary sacrifice[1]	-	_ssfai	_ssfaf
Non-cash benefits[1]	-	_nbfai	_nbfaf
Australian Government pension	-	_bnfpeni	_bnfpenf
Australian Government parenting payment	-	_bnfpari	_bnfparf
Australian Government allowances	-	_bnfalli	_bnfallf
Australian Government Bonus payments	-	_bnfboni	_ bnfbonf
Australian Government income support payments	_bnfis	_bnfisi	_bnfisf
Australian Government non-income support payments	_bnfnis	_bnfnisi	_bnfnisf
Australian public transfers	-	_bnfapti	_bnfaptf
Non-income support other than family payment	-	_bnfonii	_bnfonif
Other regular public payments	-	_bnfrpi	_bnfrpf
Other domestic Government benefits and Australian Government NEI to classify	-	_bnfobi	_bnfobf
Foreign Government pensions	-	_bnffpi	_bnffpf
Business income	-	_bifip, _bifin	_biff
Investments	-	_oifinip, _oifinin	_oifinf
Regular private pensions	-	_oifppi	_oifppf

	Pre-imputed	*Post-imputed*	*Flag*
Regular superannuation / annuity	_oifsupa	_oifsupi	_oifsupf
Regular workers compensation insurance	_oifwkca	_oifwkci	_oifwkcf
Regular private transfers	-	_oifpti	_oifptf
Gross regular income[2]	-	_tifefp, _tifefn	_tifeff
Gross total income	-	_tifeftp, _tifeftn	_tifeftf
Redundancy and severance payments	_oifrsva	_oifrsvi	_oifrsvf
Irregular income other than redundancy	_oifoira	_oifoiri	_oifoirf
Regular market income		_tifmkip, _tifmkin	_tifmktf
Regular private income	-	_tifpiip, _tifpiin	_tifpif
Disposable regular income	-	_tifdip, _tifdin	_tifdif
Disposable total income	-	_tifditp, _tifditn	_tifditf
Irregular income	-	_oifwfli	_oifwflf
Household file			
Current income			
Wages and salaries – all jobs	-	_hiwscei	_hiwscef
Wages and salaries – main job	-	_hiwscmi	_hiwscmf
Wages and salaries – other jobs	-	_hiwscoi	_hiwscof
Australian Government pension	-	_hicpeni	_hicpenf
Australian Government parenting payment	-	_hicpari	_hicparf
Australian Government allowances	-	_hicalli	_hicallf
Non-income support other than family payment	-	_hiconii	_hiconif
Other domestic Government benefits and Australian Government NEI to classify	-	_hicobi	_hicobf
Financial year income			
Wages and salaries	-	_hiwsfei	_hiwsfef
Australian Government pension	-	_hifpeni	_hifpenf
Australian Government parenting payment	-	_hifpari	_hifparf

	Pre-imputed	*Post-imputed*	*Flag*
Australian Government allowances	-	_hifalli	_hifallf
Australian Government Bonus payments	-	_hifboni	_hifbonf
Australian Government income support payments	-	_hifisi	_hifisf
Australian Government non-income support payments	-	_hifnisi	_hifnisf
Australian public transfers	-	_hifapti	_hifaptf
Non-income support other than family payment	-	_hifonii	_hifonif
Other regular public payments	-	_hifrpi	_hifrpf
Other domestic Government benefits and Australian Government NEI to classify	-	_hifobi	_hifobf
Foreign Government pensions	-	_hiffpi	_hiffpf
Business income	-	_hibifip, _hibifin	_hibiff
Investments	-	_hifinip, _hifinin	_hifinf
Regular private pensions	-	_hifppi	_hifppf
Regular private transfers	-	_hifpti	_hifptf
Gross regular income	-	_hifefp, _hifefn	_hifeff
Gross total income	-	_hifeftp, _hifeftn	_hifeftf
Regular market income	-	_hifmkip, _hifmkin	_hifmktf
Disposable regular income	-	_hifdip, _hifdin	_hifdif
Disposable total income	-	_hifditp, _hifditn	_hifditf
Regular private income	-	_hifpiip, _hifpiin	_hifpif
Irregular income	-	_hifwfli	_hifwflf

[1] From wave 10 onwards.

[2] The following variables use total person financial year income (_tifefn, _tifefp) in their calculations: income tax (_txinc), and Medicare (_txmed). Use _tifeff as imputation flag for these variables.

4.21 Wealth (Special Topic in Waves 2, 6, 10 and 14)

4.21.1 Wealth Model

A wealth module has been incorporated into the questionnaires every fourth wave since wave 2. The Household Questionnaire contains the majority of the wealth questions and we endeavour to ask these of the person knowing the most about the household finances. These questions cover the following topics:

- Cash and equity investments, trust funds, life insurance;
- Home and other property assets and debts;
- Business assets and debts;
- Children's bank accounts;[18]
- Collectables and vehicles, and
- Overdue household bills (from wave 6 only[19]).

Also, each respondent was asked some questions about their personal wealth in the Person Questionnaire, including:

- Bank accounts and credit card debt;
- Superannuation;
- HECS debt; and
- Other personal debts[20].

Figure 4.9 shows how the wealth components are combined together to form the total household wealth. The boxes with the broken lines highlight the variables that come from the Person Questionnaire. From Release 6, the imputation for non-respondents has been conducted at the wealth component level, so the household-level components are the sum of all persons in the household.[21]

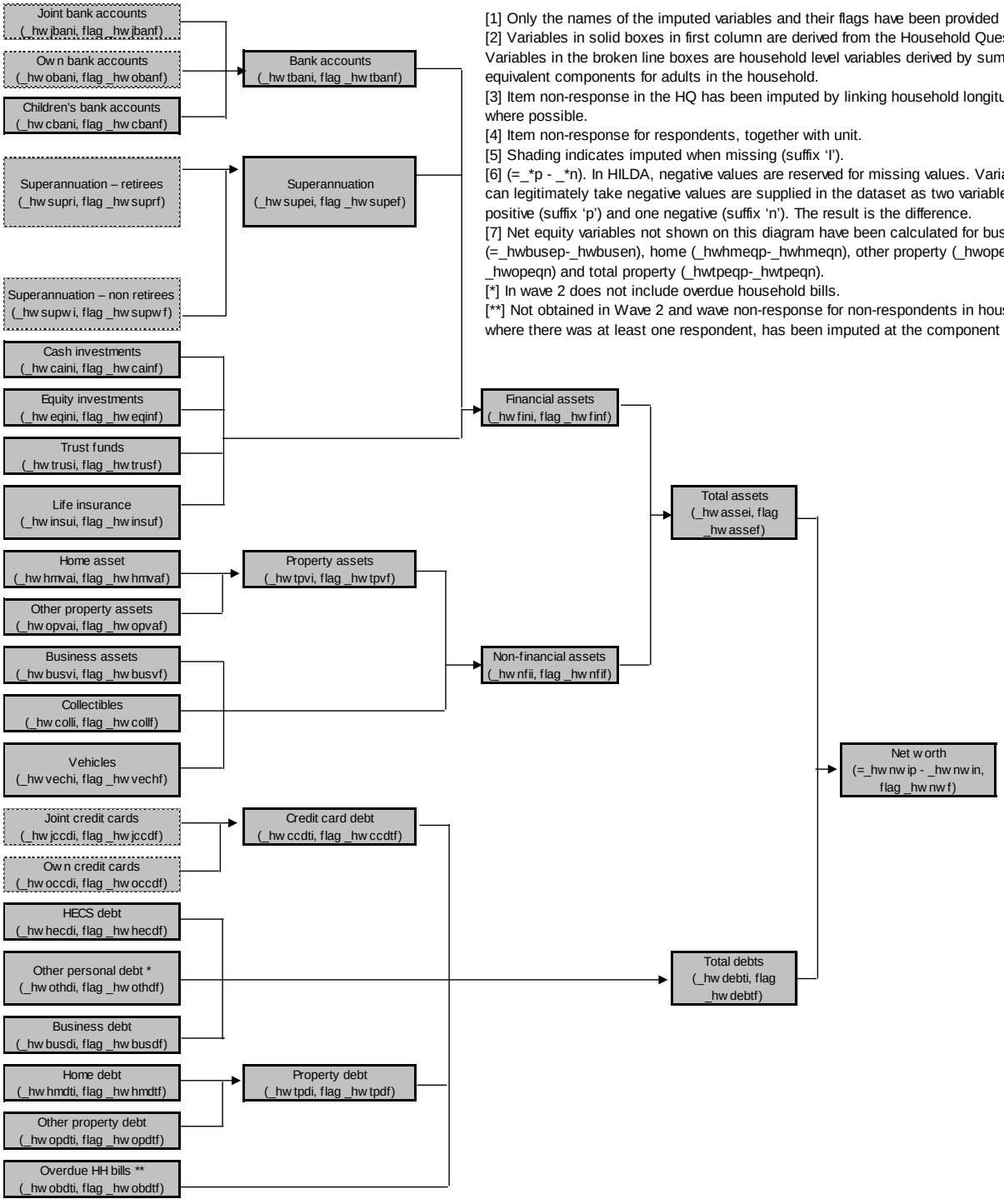
[18] That is, bank accounts of people in the household aged under 15.

[19] Overdue household bills were not obtained in wave 2. It was assumed that this was captured in the 'any other debt' question asked in wave 2 (though perhaps not well).

[20] In wave 2, other personal debts were asked as a single aggregate item; from wave 6 onwards other personal debts were obtained at a more disaggregated level and overdue personal bills were also explicitly asked for.

[21] For Release 2 to 5, please note that the imputation for non-respondents was only conducted at the total assets and debts level. As a result the household-level components that summed these person-level components was just the sum of ***responding*** persons only. This will explain some of the differences observed for these variables between releases.

Figure 4.9: Wealth model (household-level)



Several equity variables (assets less debts) not described in the previous figure are provided on the household file. These are business equity, home equity, other property equity, and total property equity. These variables, together with the unimputed versions of the sub-totals described in Figure 4.9 are provided in Table 4.20 (variables relating directly to the wealth imputation are provided later in Table 4.23).

Table 4.20: Other derived wealth variables at household-level

	Pre-imputed	*Post-imputed*	*Imputation flag*
Business equity (weighted topcode)	_hwbusep, _hwbusen	_hwbeip, _hwbein	_hwbef
Home equity (weighted topcode)	_hwhmeqp, _hwhmeqn	_hwhmeip, _hwhmein	_hwhmef
Other property equity (weighted topcode)	_hwopeqp, _hwopeqn	_hwopeip, _hwopein	_hwopef
Total property equity (weighted topcode)	_hwtpeqp, _hwtpeqn	_hwtpeip, _hwtpein	_hwtpef
Total property value (weighted topcode)	_hwtpval		
Home loans - from financial institution - from other source (friend, relative, etc) - secured against property	_hwhmhl, _hwhmol, _hwhmeql		
Total property debt (weighted topcode)	_hwtpdt		
Total credit card debt	_hwccdt		
Retiree's superannuation	_hwsuprt		
Total superannuation (weighted topcode)	_hwsuper		
Total bank accounts (weighted topcode)	_hwtbank		
Household financial assets (weighted topcode)	_hwfin		
Household non-financial assets (weighted topcode)	_hwnfin		

4.21.2 Wealth Imputation Method

The imputation method adopted for the wealth data takes advantage of four observation points (waves 2, 6,10 and 14). A summary of the steps in the imputation process is provided below:

- Step 1 – Create a longitudinal household identifier. For variables imputed at the household-level, households are linked longitudinally if they had common membership and any additional household members were children (defined for this purpose to be under 18 years of age) and any missing household members were children or deceased.[22]
- Step 2 – Nearest Neighbour Regression imputation of zeros. The predicted values from a regression model are used to identify a donor from which to flag zero or non-zero imputes for the recipient. This is essentially a filter process to decide whether the case has the asset or debt.

[22] *_hwlink* is an indicator variable for whether the household could be linked to a household four waves later.

- Step 3 – Nearest Neighbour Regression imputation of non-zero amounts. The predicted values from a regression model are used to identify a donor from which the reported value is taken as the imputed value for the recipient. The models and donor pools are restricted to cases with non-zero amounts.
- Step 4 – Little and Su imputation. This method incorporates (via a multiplicative model) the trend across waves (column effect), the recipient's departure from the trend (row effect), and a residual effect donated from another case with complete wealth information for that component (residual effect). Wherever possible, the Little and Su imputation replaces the Nearest Neighbour Regression imputation. The zero or non-zero determination from step 2 is observed.

Imputation classes were used for some variables to ensure the donors and recipients match on a small number of characteristics (typically wealth bands and filter variables).

Note that the household-level wealth variable for home value was collected in all waves and has been imputed via the same approach outlined above. *_hhlink* is an indicator variable showing whether a household was linked to another household in the next wave for the purposes of imputing home value.

A detailed description of the imputation process for wealth variables is provided by Hayes and Watson (2009). Appendix 2 provides an extract from this paper which details the Nearest Neighbour Regression method and Little and Su method.

Table 4.20 and Table 4.21 show the percentage of missing cases that were imputed by each imputation method.[23] In the first table the percentages are summarized across all wealth variables that have been imputed. As with income it is preferable to have all records imputed by the Little and Su method but, with only four waves of wealth data, sufficient information was not always available. Non-respondents in the enumerated person group were less likely to be imputed by the Little and Su method (for similar reasons as in income imputation) and any households not linked between waves were imputed via the nearest neighbour regression method. In Wave 11, a top-up sample was included. The proportion of missing cases imputed by the Little & Su method at the responding person-level, the enumerated person-level, and the household-level in the main sample is 66.2, 44.6, and 43.6 respectively.

Table 4.22 shows a much higher percentage of records imputed via the Little and Su method for home value due to better household linking between consecutive waves (rather than the four-wave difference experienced with the imputation of other wealth variables).

[23] For the proportion of cases which are missing, see Table 6.4 and Table 6.5

Table 4.21: Percentage of missing cases imputed by imputation method (wealth), waves 2, 6, 10 and 14

Imputation Method	*Wave 2*	*Wave 6*	*Wave 10*	*Wave 14*[*]
Person level wealth items (responding persons)				
Nearest Neighbour	33.2	29.5	28.0	49.1
Little & Su	66.8	70.5	72.0	50.9
Person level wealth items (enumerated persons)				
Nearest Neighbour	66.8	53.7	49.4	65.6
Little & Su	33.2	46.3	50.6	34.4
Household level wealth items				
Nearest Neighbour	30.2	21.9	28.0	68.4
Little & Su	69.8	78.1	72.0	31.6

* In Wave 11, a top-up sample was included. The proportion of missing cases imputed by the Little & Su method at the responding person-level, the enumerated person-level, and the household-level in the main sample is 66.2, 44.6, and 43.6 respectively.

Table 4.22: Percentage of missing cases imputed by imputation method (home value), waves 1 - 14

Imputation Method	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*[*]	*12*	*13*	*14*
Home value (households)														
Nearest Neighbour	26.6	4.8	7.4	5.9	7.6	8.2	6.6	6.5	9.5	10.3	18.7	11.6	18.0	20.8
Little & Su	73.4	95.2	92.6	94.1	92.4	91.8	93.4	93.5	90.5	89.7	81.3	88.4	82.0	79.2
Number imputed	312	378	269	187	157	196	121	138	168	234	219	216	200	231

* In Wave 11, 2,153 top-up households were added to the 7,390 on-going households.

4.21.3 Imputed Wealth Variables

Table 4.23 outlines the imputed wealth variables included on the wave 2, 6, 10 and 14 files. Further, as mentioned earlier, home value, *_hsvalue,* has been imputed in all waves (*_hsvalui*) and the imputation flag provided (*_hsvaluf*). *_hsvalue* differs from *_hwhmval* in that it is the total value of the home, whereas *_hwhmval* is the share owned by the household members (which is just collected in waves 2, 6, 10 and 14).

Table 4.23: Imputed wealth variables

	Pre-imputed	*Post-imputed*	*Flag*
Responding person file			
Assets			
Joint bank accounts	_pwjbank	_pwjbani	_pwjbanf
Own bank accounts	_pwobank	_pwobani	_pwobanf
Superannuation – retirees	_pwsuprt	_pwsupri	_pwsuprf
Superannuation – non-retirees	_pwsupwk	_pwsupwi	_pwsupwf
Debts			
HECS debt	_pwhecdt	_pwhecdi	_pwhecdf
Joint credit cards	_pwjccdt	_pwjccdi	_pwjccdf
Own credit cards	_pwoccdt	_pwoccdi	_pwoccdf
Other personal debt	_pwothdt	_pwothdi	_pwothdf
Enumerated person file			
Assets			
Joint bank accounts	-	_pwjbani	_pwjbanf
Own bank accounts	-	_pwobani	_pwobanf
Superannuation – retirees	-	_pwsupri	_pwsuprf
Superannuation – non-retirees	-	_pwsupwi	_pwsupwf
Debts			
HECS debt	-	_pwhecdi	_pwhecdf
Joint credit cards	-	_pwjccdi	_pwjccdf
Own credit cards	-	_pwoccdi	_pwoccdf
Other personal debt	-	_pwothdi	_pwothdf

Household file			
Assets			
Joint bank accounts	_hwjbank	_hwjbani	_hwjbanf
Own bank accounts	_hwobank	_hwobani	_hwobanf
Children's bank accounts	_hwcbank	_hwcbani	_hwcbanf
Superannuation – retirees	_hwsuprt	_hwsupri	_hwsuprf
Superannuation – non-retirees	_hwsupwk	_hwsupwi	_hwsupwf
Business assets	_hwbusva	_hwbusvi	_hwbusvf
Cash investment	_hwcain	_hwcaini	_hwcainf
Equity investment	_hweqinv	_hweqini	_hweqinf
Collectibles	_hwcoll	_hwcolli	_hwcollf
Home asset	_hwhmval	_hwhmvai	_hwhmvaf
Other property assets	_hwopval	_hwopvai	_hwopvaf
Life insurance	_hwinsur	_hwinsui	_hwinsuf
Trust funds	_hwtrust	_hwtrusi	_hwtrusf
Vehicles value	_hwvech	_hwvechi	_hwvechf
Total household assets	_hwasset	_hwassei	_hwassef
Debts			
HECS debt	_hwhecdt	_hwhecdi	_hwhecdf
Joint credit cards	_hwjccdt	_hwjccdi	_hwjccdf
Own credit cards	_hwoccdt	_hwoccdi	_hwoccdf
Other personal debt	_hwothdt	_hwothdi	_hwothdf
Business debt	_hwbusdt	_hwbusdi	_hwbusdf
Home debt	_hwhmdt	_hwhmdti	_hwhmdtf
Other property debt	_hwopdt	_hwopdti	_hwopdtf
Overdue household bills[1]	_hwobdt	_hwobdti	_hwobdtf
Total household debts	_hwdebt	_hwdebti	_hwdebtf
Net worth	_hwnetwp, _hwnetwn	_hwnwip, _hwnwin	_hwnwf

1. Variable not in wave 1.

4.22 Expenditure

In every wave, the HILDA Survey collects housing expenditure (on rent and mortgage repayments) in the Household Questionnaire. The household expenditure on groceries, food and meals eaten outside were collected in the Household Questionnaire for waves 1, 3-5, and 11-14. Household expenditure on a wide range of goods and services were first collected in the wave 5 Self-Completion Questionnaire. The list of items collected was expanded to include consumer durables from wave 6 and some were dropped in wave 11.

While the person in the household responsible for the household bills was asked to complete the household-level expenditure questions in the SCQ, sometimes more than one person in a household provided answers. The variables with the prefix *_hx* averages the responses across all individuals who provided a response to these expenditure questions (the responses from dependent students who stated they are not responsible for the household bills are excluded)[1].

4.22.1 Imputation Method

A summary of the steps in the imputation process is provided below:

- Step 1 – Create a longitudinal household identifier. For variables imputed at the household-level, households are linked longitudinally if they had common membership. Deaths and births, for the purposes of expenditure imputation, are counted as a membership change.
- Step 2 – Identify lumpy expenditure items. Some items (such as cars, white goods, etc.) would not be purchased each year, so need to be treated differently in the imputation process.
- Step 3 – Carryover zeros. The population carryover method is used to determine zero and non-zero expenditure flags for non-lumpy expenditure items prior to any other imputation. Lumpy expenditure items were excluded from this step.
- Step 4 – Nearest Neighbour Regression imputation of zeros. The predicted values from a regression model are used to identify a donor from which to flag zero or non-zero imputes for the recipient. This is essentially a filter process to decide whether the case has the expense or not.
- Step 5 – Nearest Neighbour Regression imputation of non-zero amounts. The predicted values from a regression model are used to identify a donor from which the reported value is taken as the imputed value for the recipient. The models and donor pools are restricted to cases with non-zero amounts. For households without any expenditure data reported in the SCQ, a single donor for all expenditure variables collected in the SCQ was used.
- Step 6 – Little and Su imputation. This method incorporates (via a multiplicative model) the trend across waves (column effect), the recipient's departure from the trend (row effect), and a residual effect donated from another case with complete expenditure information for that

component (residual effect). Only cases that have been enumerated in more than one wave, longitudinally linked, and have at least one wave of non-zero data available can be imputed via this method. For the lumpy expenditure items, the donors selected had to have the same zero pattern for the non-missing waves as the recipients. Wherever possible, the Little and Su imputation replaces the Nearest Neighbour Regression imputation. The zero or non-zero determination from steps 3 and 4 is observed.

Imputation classes were used for some variables to ensure the donors and recipients match on a small number of characteristics (typically equivalised household disposable income bands and the age group of the highest income earner were used).

A full description of the imputation process for the expenditure variables is provided by Sun (2010). Appendix 2 of this User Manual provides an extract from Hayes and Watson (2009) which details the Nearest Neighbour Regression method, the Little and Su method and the Population Carryover method.

Table 4.24 shows the percentage of missing cases that were imputed by each imputation method.[24] Ideally all the records should be imputed by a longitudinal imputation method, such as the Little and Su method or the Carryover method. The households which cannot be linked between waves were imputed by the Nearest Neighbour Regression method regardless of their situation. For the housing expenditure variables (rent payment, mortgage repayment and second mortgage repayment), which have been collected in all waves so far, the majority of cases were imputed by the Little and Su method. For the expenditure items collected from wave 6 onwards where we have fewer waves of data available, about a third of the cases were imputed by the Nearest Neighbour Regression method.

[24] For the proportion of cases which are missing, see Table 6.8

Table 4.24: Percentage of missing cases imputed by imputation method (expenditure), waves 1 – 14

	Wave													
Imputation method	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Housing and work-related childcare expenditure variables (collected in all waves Household Questionnaire)														
Nearest Neighbour	45.6	12.7	16.8	17.7	13.1	23.3	14.3	19.6	20.4	24.4	16.8	17.4	19.0	34.6
Little & Su	46.6	71.4	76.2	78.2	78.1	72.2	77.2	76.3	67.5	60.1	68.8	71.7	69.1	59.1
Carryover	7.8	15.9	7.0	4.1	8.8	4.5	8.7	4.1	12.0	15.5	14.4	10.8	11.9	6.3
Non-work-related childcare expenditure variables (collected in the Household Questionnaire from wave 2)														
Nearest Neighbour	-	55.6	20.0	44.4	72.7	75.0	71.4	71.4	57.9	57.9	62.5	51.6	61.4	63.0
Little & Su	-	30.5	40.0	44.4	27.3	25.0	23.8	19.1	23.1	42.1	28.1	38.7	31.8	37.0
Carryover	-	13.9	40.0	11.1	0.0	0.0	4.8	9.5	19.0	0.0	9.4	9.7	6.8	0.0
Weekly household expenditure variables (collected in wave 1, 3-5, 11+ Household Questionnaire)														
Nearest Neighbour	55.9	-	26.5	14.4	27.9	-	-	-	-	-	33.7	13.8	21.0	23.6
Little & Su	43.1	-	66.2	78.1	66.2	-	-	-	-	-	61.9	80.0	70.9	70.7
Carryover	1.0	-	7.4	7.4	5.9	-	-	-	-	-	4.4	6.2	8.1	5.7
Annualised household expenditure variables (collected in the Self-Completion Questionnaire from wave 5)														
Nearest Neighbour	-	-	-	-	49.3	34.5	31.4	31.1	32.2	31.9	33.8	31.8	34.0	48.3
Little & Su	-	-	-	-	37.9	44.5	49.4	48.8	48.9	49.7	49.7	49.3	48.2	40.0
Carryover	-	-	-	-	12.9	21.0	19.2	20.1	18.9	18.4	16.5	18.9	17.8	17.7

	Wave													
Imputation method	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Annualised household expenditure variables (collected in the Self-Completion Questionnaire from wave 6)														
Nearest Neighbour	-	-	-	-	-	48.8	30.3	29.3	30.1	29.5	32.1	30.2	33.0	46.6
Little & Su	-	-	-	-	-	40.6	53.8	54.9	53.8	55.0	53.9	53.6	51.6	43.4
Carryover	-	-	-	-	-	10.6	15.9	15.7	16.1	15.5	14.0	16.2	15.3	10.0

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4.22.2 Imputed Household Expenditure Variables

All expenditure imputation was undertaken at the household level. Both the pre- and post-imputed variables are available in the datasets, along with an imputation flag. Table 4.25 provides an overview of the pre- and post-imputed expenditure variables and the waves in which they are available.

Table 4.25: Imputed household expenditure variables

	Wave	*Pre-imputed*[1]	*Post-imputed*	*Flag*
Usual payments/repayments per month (Collected in the HQ)				
Rent	1 - 14	_hsrnt	_hsrnti	_hsrntfg
First mortgage	1 - 14	_hsmg	_hsmgi	_hsmgfg
Second mortgage	1 - 14	_hssl	_hssli	_hsslfg
Weekly household expenditure (Collected in the HQ)				
All groceries	1, 3 – 5, 11-14	_xpgroc	_xpgroci	_xpgrocf
Groceries for food and drink	1, 3 – 5, 11-14	_xpfood	_xpfoodi	_xpfoodf
Meals eaten outside	1, 3 – 5, 11-14	_xposml	_xposmli	_xposmlf
Total cost of childcare, all school age children, during school holidays, across all types of care, while parents work	1 – 14	_chctc	_chctci	_chctcf
Total cost of childcare, all not yet at school children, across all types of care, while parents work	1 – 14	_cpctc	_cpctci	_cpctcf
Total cost of childcare for all school age children during term, across all types of care. While parents work	1 – 14	_ csctc	_csctci	_csctcf
Total cost of childcare for all not yet at school children across all types of care, not employment related.	2 – 14	_ npctc	_npctci	_npctcf
Total cost of childcare for all school age children across all types of care, not employment related	2 – 14	_nsctc	_nsctci	_nsctcf
Annualized household expenditure (Collected in the SCQ)[1]				
Groceries	5 – 14	_hxygroc	_hxygrci	_hxygrcf
Alcohol	5 – 14	_hxyalc	_hxyalci	_hxyalcf
Cigarettes and tobacco	5 – 14	_hxycig	_hxycigi	_hxycigf
Public transport and taxis	5 – 14	_hxypubt	_hxypbti	_hxypbtf
Meals eaten out	5 – 14	_hxymeal	_hxymli	_hxymlf

	Wave	*Pre-imputed*[1]	*Post-imputed*	*Flag*
Leisure activities	5	_hxyhsge	_hxyhsgi	_hxyhsgf
Motor vehicle fuel	5 – 14	_hxymvf	_hxymvfi	_hxymvff
Men's clothing and footwear	6 – 14	_hxymcf	_hxymcfi	_hxymcff
Women's clothing and footwear	6 – 14	_hxywcf	_hxywcfi	_hxywcff
Children's clothing and footwear	6 – 14	_hxyccf	_hxyccfi	_hxyccff
Clothing and footwear	5	_hxyclth	_hxyclti	_hxycltf
Telephone rent and calls	5	_hxytel	_hxytli	_hxytlf
Telephone rent and calls, internet charges	6 – 14	_hxyteli	_hxytlii	_hxytlif
Holidays and holiday travel costs	5 – 10	_hxyhol	_hxyholi	_hxyholf
Private health insurance	5 – 14	_hxyphi	_hxyphii	_hxyphif
Other insurances	6 – 14	_hxyoi	_hxyoii	_hxyoif
Fees paid to health practitioner	6 – 14	_hxyhltp	_hxyhlpi	_hxyhlpf
Medicines, prescriptions and pharmaceuticals	6 – 14	_hxyphrm	_hxyphmi	_hxyphmf
Health care	5	_hxyhlth	_hxyhthi	_hxyhthf
Electricity bills	5	_hxyelec	_hxyelei	_hxyelef
Gas bills	5	_hxygas	_hxygasi	_hxygasf
Other heating fuel	5	_hxyohf	_hxyohfi	_hxyohff
Electricity, gas bills and other heating fuel	6 – 14	_hxyutil	_hxyutli	_hxyutlf
Repairs, renovation and maintenance to home	5 – 14	_hxyhmrn	_hxyhmri	_hxyhmrf
Motor vehicle repairs and maintenance	5 – 14	_hxymvr	_hxymvri	_hxymvrf
Education fees	5 – 14	_hxyeduc	_hxyedci	_hxyedcf
Buying brand new vehicles	6 – 10	_hxyncar	_hxyncri	_hxyncrf
Buying used vehicles	6 – 10	_hxyucar	_hxyucri	_hxyucrf
Computers and related services	6 – 10	_hxycomp	_hxycmpi	_hxycmpf
Audio visual equipment	6 – 10	_hxytvav	_hxytvi	_hxytvf
Household appliance	6 – 10	_hxywg	_hxywgi	_hxywgf
Furniture	6 – 10	_hxyfurn	_hxyfrni	_hxyfrnf

[1] The household-level responses provided by each person in the household responsible for household expenditure are provided in equivalent variables to the pre-imputed household expenditure variables from the SCQ (*_hx* is replaced by *_xp* to give variables *_xpgroc* to *_xpyfurn*). Most users will use the *_hx* variables.

4.23 Weights

4.23.1 Cross-Sectional Weights

Wave 1

In wave 1, we essentially had a complex cross-sectional survey. The initial (or design) weights are derived from the probability of selecting the households into the sample. These household weights are adjusted according to information collected about all selected households (both responding and non-responding) and then calibrated so that weighted household estimates from the HILDA Survey match several known household-level benchmarks.

The person-level weights are based on the household-level weights, with adjustments made based on information collected about all the people listed in the responding households. These weights are also calibrated to ensure that the weighted person estimates match several known person-level benchmarks.

More information about the weighting procedure can be found in Watson (2012). See the section below for a description of the benchmarks used.

Waves 2 to 10

From wave 2 to 10, the 'selection' of the sample is dependent on the wave 1 responding sample and the household and individual attrition after wave 1. The cross-sectional weights for wave 2 onwards opportunistically include temporary members into the sample (i.e., those people who are part of the sample only because they currently live with a continuing sample member). The underlying probability of selection for these households is amended to account for the various pathways from wave 1 into the relevant wave household. Following this, non-response adjustments are made which require within-sample modelling of non-response probabilities and calibration to known population estimates at both the household and person level.

The weighting process for wave 2 to 10 is detailed in Watson (2012). See the section below for a description of the benchmarks used.

Wave 11 onwards

In wave 11, we added a top-up sample and the cross-sectional weights integrate the main sample and the top-up sample. In both samples the initial weights are calculated as described above, followed by a non-response adjustment. These weights are then integrated for the parts of each sample that represents the same portion of the population (i.e. the Australian population apart from those who arrived in Australia after 2001). A final calibration step ensures the HILDA estimates match known population estimates. See Watson (2012) for details. From wave 12 onwards, an attrition adjustment is made from wave 1 for the main sample and from wave 11 for the top-up sample (as described in the section above on the weights for waves 2 to 10). The temporary sample members currently living with permanent sample members are included in the cross-sectional weights applicable for the wave.

4.23.2 Longitudinal Weights

By comparison, the construction of longitudinal weights are more straightforward and only include an adjustment for attrition and benchmarking back to the initial wave characteristics. The longitudinal weights are described in Watson (2012).

We have provided longitudinal weights for the balanced panel of responding persons or enumerated persons from every wave to every other wave and for the balanced panel of any combination of a pair of waves. These weights adjust for attrition from the initial wave and are benchmarked back to the key characteristics of the initial wave.[25] For instance if you were interested in a panel of respondents from waves 2 through 6, the weight provided for this panel would adjust for attrition from the balanced panel from wave 2 to 6 and would ensure key characteristics of the wave 2 population are matched.

4.23.3 Benchmarks

The benchmarks used in the weighting process are listed in Table 2.46[26]. Note that very remote parts of New South Wales, Queensland, South Australia, Western Australia and the Northern Territory have been excluded from the benchmarks, which is in line with the practice adopted in similar large-scale surveys run by the ABS. As a result, a small number of cases may have zero weights. Further, the benchmarks also exclude people living in non-private dwellings, so people that move into these dwellings after wave 1 are given zero cross-sectional weights. More details are provided in Watson (2012).

[25] Deaths and overseas movers are included as 'responses' in the balanced panel, so benchmarking to the key characteristics of the initial wave allows for the chance that some non-respondents who are no longer issued to field to die or move overseas in later waves.

[26] The Australian Bureau of Statistics provide the benchmarks used in the weighting process. The Labour Force Estimates team provide the estimates for labour force status and marital status, and the Demography Section provide the household estimates and the remaining person estimates. The ABS have now revised these benchmarks to take into account the 2001 Census data, resulting in a 20 year recasting of the person and household estimates (ABS Cat.No. 3101.0, 2013, Feature Article 2). Further the ABS has modified the way they calculate the household estimates which eliminates the need for the HILDA team to make any adjustment to the household estimates between 2001 to 2006 which was described in Watson (2012). Further, a non-ABS benchmark of the population estimate of of matched deaths from the initial cross-section of the balanced panel was added to the longitudinal weights.

Table 4.26: Benchmarks used in weighting

	Household weights	*Enumerated person weights*	*Responding person weights*
Cross-sectional weights	Number of adults by number of children State by part of State Determined jointly with enumerated person weights	Sex by broad age State by part of State Labour force status Marital status Determined jointly with household weights	Sex by broad age State by part of State State by labour force status Marital status Household composition (number of adults and children)
Longitudinal weights	Not applicable	Sex by broad age State by part of State Labour force status Marital status Household composition (number of adults and children) Matched deaths	Sex by broad age State by part of State State by labour force status Marital status Household composition (number of adults and children) Matched deaths

4.23.4 Replicate Weights

Replicate weights have been provided for users to calculate standard errors that take into account the complex sample design of the HILDA Survey. These weights can be used by the SAS GREGWT macro, the STATA 'svy jackknife' commands (more detail is provided below in the section on *Calculating Standard Errors*), or you can write your own routine to use these weights. Weights for 45 replicate groups are provided.

4.23.5 Weights Provided on the Data Files

Table 4.27 provides a list of the weights provided on the data files together with a description of those weights. The longitudinal weights provided on the enumerated and responding person files are the ones you are most likely to use, though other longitudinal weights are provided on the *Longitudinal Weights File*. For the first time in Release 14, we have included cross-sectional SCQ responding person weights that are applicable to variables collected in the SCQ. We plan to release longitudinal SCQ weights in Release 15.

Irrespective of the modifications made in how the weights are constructed, some changes are expected to the weights with each new release. There are three reasons for this. Firstly, corrections may be made to age and sex variables when these are confirmed with individuals in subsequent wave interviews. Secondly, the benchmarks are updated from time to time. Thirdly, duplicate or excluded people in the sample may be identified after the release (very occasionally).

Table 4.27: Weights

Weights	*Description*
Household File	
_hhwth[1]	The household weight is the cross-section population weight for all households responding in the relevant wave. Note the sum of these household weights for wave 1 is approximately 7.4 million.
_hhwths	This is the cross-section household population weight rescaled to the sum of the sample size for the relevant wave (i.e. 7682 responding households in wave 1). Use this weight when the statistical package requires the weights to sum to the sample size.
_rwh1 to _rwh45	Cross-section household population replicate weights.
Enumerated Person File	
_hhwte[1]	The enumerated person weight is the cross-section population weight for all people who are usual residents of the responding households in the relevant wave (this includes children, non-respondents and respondents). The sum of these enumerated person weights for wave 1 is 19.0 million
_hhwtes	This is the cross-section enumerated person population weight rescaled to the sum of the sample size for the relevant wave (i.e. for wave 1, 19,914 enumerated persons). Use this weight when the statistical package requires the weights to sum to the sample size
_lnwte	This longitudinal enumerated person weight is the longitudinal population weight for all people who were enumerated (i.e. in responding households) each wave from wave 1 to the wave where this variable resides. This weight applies to the following people in responding households: children, non-respondents, intermittent respondents, and full respondents. *blnwte* is for the balanced panel of enumerated persons from wave 1 to 2; *clnwte* is for the balanced panel from wave 1 to 3; *dlnwte* is for the balanced panel from wave 1 to 4, etc These variables are also on the *Longitudinal Weights File*, but are named differently: *wlea_b*; *wlea_c*; *wlea_d*, etc
_rwe1 to _rwe45	Cross-section enumerated person population replicate weights.
_rwlne1 to _rwlne45	Longitudinal enumerated person population replicate weights.
Responding Person File	
_hhwtrp[1]	The responding person weight is the cross-section population weight for all people who responded in the relevant wave (i.e. they provided an individual interview). The sum of these responding person weights for wave 1 is 15.0 million.
_hhwtsc[1]	The SCQ responding person weight is the cross-section population weight for all people who responded to the SCQ in the relevant wave (i.e. they provided a self-completion questionnaire). The sum of these responding person weights for wave 1 is 15.0 million.
_hhwtrps	This is the cross-section responding person population weight rescaled to sum to the number of responding persons in the relevant wave (i.e. 13,969 in wave 1). Use this weight when the statistical package requires the sum of the weights to be the sample size.

Weights	*Description*
_hhwtscs	This is the cross-section SCQ responding person population weight rescaled to sum to the number of responding persons in the relevant wave (i.e. 13,969 in wave 1). Use this weight when the statistical package requires the sum of the weights to be the sample size.
_lnwtrp	This longitudinal responding person weight is the longitudinal population weight for all people responding (i.e. provided an interview) each wave from wave 1 to the wave where this variable resides. *blnwtrp* is for the balanced panel of respondents from wave 1 to 2; *clnwtrp* is for the balanced panel from wave 1 to 3; *dlnwtrp* is for the balanced panel from wave 1 to 4, etc. These variables are also on the *Longitudinal Weights File*, but are named differently: *wlra_b*; *wlra_c*; *wlra_d*, etc.
_rwrp1 to _rwrp45	Cross-sectional responding person population replicate weights (for people who provided an individual interview).
_rwsc1 to _rwsc45	Cross-sectional SCQ responding person population replicate weights (for people who provided a Self-completion Questionnaire).
_rwlnr1 to _rwlnr45	Longitudinal responding person population replicate weights.
Longitudinal Weights File	
wlet1_tn	Longitudinal enumerated person weight for the balanced panel of all people who were enumerated (i.e. part of a responding household) each wave from wave *t1* to *tn*. Wave letters are used in place to *t1* and *tn*. For example, *wlec_f* is the longitudinal enumerated person weight for the balanced panel from wave 3 to 6.
wlet1tn	Longitudinal enumerated person weight for the balanced panel of all people who were enumerated (i.e. part of a responding household) in wave *t1* and *tn*. Wave letters are used in place to *t1* and *tn*. The paired longitudinal weights do not restrict individuals in any way based on their response status in waves between *t1* and *tn*. For example, *wlecf* is the longitudinal enumerated person weight for the balanced panel of enumerated people in wave 3 and 6 (they may or may not have been enumerated in other waves).
wleb__j, wlef__n, wleb__n	Longitudinal enumerated person weight for the balanced panel of all people who were enumerated when the wealth module was asked (b__j denotes waves 2, 6 and 10, f__n denotes waves 6,10,14, b__n denotes waves 2, 6, 10 and 14). Note the use of a double underscore in the variable name.
wlrt1_tn	Longitudinal responding person weight for the balanced panel of all people who were interviewed each wave from wave *t1* to *tn*. Wave letters are used in place to *t1* and *tn*. For example, wlrc_f is the longitudinal responding person weight for the balanced panel of respondents from wave 3 to 6.
wlrt1tn	Longitudinal responding person weight for the balanced panel of all people who were interviewed in wave *t1* and *tn*. Wave letters are used in place of *t1* and *tn*. The paired longitudinal weights do not restrict individuals in any way based on their response status in waves between *t1* and *tn*. For example, wlrcf is the longitudinal responding person weight for the balanced panel of respondents in wave 3 and 6 (they may or may not have been responding in other waves).

Weights	*Description*
wlrb__j, wlrf__n, wlrb__n	Longitudinal responding person weight for the balanced panel of all people who were interviewed when the wealth module was asked (b__j denotes waves 2, 6 and 10, f__n denotes waves 6, 10,and 14, b__n denotes waves 2, 6, 10 and 14). Note the use of a double underscore in the variable name.
wlrc__k	Longitudinal responding person weight for the balanced panel of all people who were interviewed in waves 3, 7 and 11 (i.e. the waves when the retirement module was asked). Note the double underscore in the variable name.
wlre__k	Longitudinal responding person weight for the balanced panel of all people who were interviewed in waves 5, 8 and 11 (i.e. the waves when the fertility module was asked). Note the double underscore in the variable name.
Longitudinal Replicate Weights File[2]	
wlet1_tn1 to wlet1_tn45	Longitudinal enumerated person replicate weights for the balanced panel from *t1* to *tn*.
wlet1tn1 to wlet1tn45	Longitudinal enumerated person replicate weights for the balanced panel for *t1* and *tn*.
wlet1__tn1 to wlet1__tn45	Longitudinal enumerated person replicate weights for the balanced panel for selected waves (relating to the repeat of specific modules) from *t1* to *tn*.
wlrt1_tn1 to wlrt1_tn45	Longitudinal responding person replicate weights for the balanced panel from *t1* to *tn*.
wlrt1tn1 to wlrt1tn45	Longitudinal responding person replicate weights for the balanced panel for *t1* and *tn*.
wlrt1__tn1 to wlrt1__tn45	Longitudinal responding person replicate weights for the balanced panel for selected waves (relating to the repeat of specific modules) from *t1* to *tn*.

[1] To help users identify what effect the inclusion of the top-up sample has on the cross-sectional estimates, we have also provided four weights in wave 11 onwards that exclude the top-up sample (_hhwthm, _hhwtem, _hhwtrpm, _hhwtscm).

[2] The Longitudinal Replicate Weights File is available on request. Please email hilda-inquiries@unimelb.edu.au.

4.23.6 Advice on Using Weights

Which Weight to Use

For some users, the array of weights on the dataset may seem confusing. This section provides examples of when it would be appropriate to use the different types of weights.

If you want to make inferences about the Australian population from frequencies or cross-tabulations of the HILDA sample then you will need to use weights. If you are only using information collected during the wave 4 interviews (either at the household level or person level) then you would use the wave 4 cross-section weights. Similarly, if you are only using wave 3 information, then you would use the wave 3 cross-section weights, and so on. If you want to infer how people have changed across the five years between waves 1 and 6, then you would use the longitudinal weights for the balanced panel from wave 1 to 6.

The following five examples show how the various weights may be used to answer questions about the population:

- What proportion of households rent in 2003? We would use the cross-section household weight for wave 3, *chhwth*, and obtain a weighted estimate of proportion of households that were renting as at the time of interview.
- How many people live in poor households in 2002? We are interested in the number of individuals with a certain household characteristic, such as having low equivalised disposable household incomes. We would use the cross-section enumerated person weight for wave 2, *bhhwte*, and count the number of enumerated people in households with poorest 10 per cent of equivalised household incomes. (We do not need to restrict our attention to responding persons only as total household incomes are available for all households after the imputation process. We also want to include children in this analysis and not just limit our analysis to those aged 15 year or older.)
- What is the average salary of professionals in 2003? This is a question that can only be answered from the responding person file or combined file using the cross-section responding person weight for wave 3, *chhwtrp*. We would identify those reportedly working in professional occupations and take the weighted average of their wages and salaries.
- What proportion of people are overweight in 2009? This question is asked in the Self-completion Questionnaire. We would use the cross-sectional SCQ responding person weight for wave 14, *ihhwtsc* (found in the responding person file or the combined file).
- For how many years have people been poor between 2001 and 2006? We might define the 'poorest' 10 per cent of households as having the lowest equivalised household incomes in each wave. We could then calculate how many years people were poor between wave 1 and wave 6, and apply the longitudinal enumerated person weight (*flnwte* or equivalently *wlea_f*) for those people enumerated every wave between wave 1 and 6.
- What proportion of people have changed their employment status between 2002 and 2007? This question can only be answered by considering the responding persons in both waves. We would use the longitudinal responding person weight for the pair of waves extracted from the Longitudinal Weight File (*wlrbg*) and construct a weighted cross-tabulation of the employment status of respondents in wave 2 against the employment status of respondents in wave 7.

As the HILDA sample progresses over time, it cannot mimic the population in one important way, being the immigration of individuals after 2001. The addition of the top-up sample in wave 11 has helped reduced the bias that this has caused in the estimates. This may result in large changes in some cross-sectional estimates between waves 10 and 11 that are associated with immigration (for example, country of birth, or migration history). See Watson (2012) for further details.

When constructing regression models, the researcher needs to be aware of the sample design and non-response issues underlying the data and will need to take account of this in some way.

Calculating Standard Errors

The HILDA Survey has a complex survey design that needs to be taken into account when calculating standard errors. It is:

- clustered – 488 areas were originally selected from which households were chosen and people are clustered within households;
- stratified – the 488 areas were selected from a frame of areas stratified by State and part of State; and
- unequally weighted – the households and individuals have unequal weights due to some irregularities in the selection of the sample in wave 1 and the non-random non-response in wave 1 and the non-random attrition in later waves.

The top-up sample included in wave 11 has a similar design.

Some options available for the calculation of appropriate standard errors and confidence intervals include:

- Standard Error Tables – Based on the wave 1 data, approximate standard errors have been constructed for a range of estimates (see Horn, 2004). Similar tables for later waves have not been produced.
- Use of the SPSS add-on module ”SPSS Complex Samples” (available from SPSS Release 12). The add-on module produces standard errors via the Taylor Series approximation. SPSS does not have a built in feature to handle replicates weights at this time.
- Use of SAS procedures SURVEYMEANS, SURVEYREG, SURVEYFREQ, SURVEYLOGISTIC, and SURVEYPHREG (SURVEYFREQ and SURVEYLOGISTIC are included in SAS Version 9 onwards and SURVEYPHREG is included since Version 9.3). Since the release of SAS Version 9, you can calculate standard errors via Taylor Series approximation or the Jackknife method. Alternatively, there is a SAS macro has been provided by one of our users in the program library that applies the Jackknife method.
- Use of GREGWT macro in SAS – Some users within DSS, ABS and other organisations may have access to the GREGWT macro that can be used to construct various population estimates. The macro uses the jackknife method to estimate standard errors using the replicate weights.
- Use of ‘svy’ commands in STATA – Stata has a set of survey commands that deal with complex survey designs. Using the ‘svyset’ commands, the clustering, stratification and weights can be assigned. You can request the standard errors be calculated using the Jackknife method using ‘svy jackknife’ and the replicate weights. Various statistical procedures are available within the suite of ‘svy’ commands including means, proportions,

tabulations, linear regression, logistic regression, probit models and a number of other commands.

A User Guide for calculating the standard errors in HILDA is provided as part of our technical paper series (see Hayes, 2008). Example code is provided in SAS, SPSS and STATA. Note however that the name of the sample design variables have changed: *xhhraid* refers to the randomised area id and *xhhstrat* refers to the wave 1 proxy stratification. Also the multiplier you need for the Jackknife method is 44/45=0.977778.

To assist you in the calculation of appropriate standard errors, the wave 1 area (cluster), and proxy stratification variables have been included all files. These are listed in Table 4.28 and need to be specified for the standard error calculations using the Taylor Series approximation method as suggested above. Any new entrants to the household are assigned to the same sample design information as the permanent sample member they join.

Table 4.28: Sample design variables

Variable	*Description*	*Design element*
xhhraid	DV: randomised area id	Cluster
xhhstrat	DV: Wave 1 Strata	Proxy stratification [1]

[1] As of Release 6 the proxy stratification variable has replaced the major statistical region as the variable to be used in the Taylor Series approximation method. The new stratification variable is essentially a collapsed area unit variable that approximates both the effect of the systematic selection and stratification of the survey selection better than only using the variable for the major statistical region.

Also, a few users may be interested in the sample design weight in wave 1 before any benchmark or non-response adjustments have been made. This is available on the household file as *ahhwtdsn*.

5 DOCUMENTATION

5.1 Documentation Choices

Before you get lost in the array of documentation, it is worth pausing to consider how you work and what documentation is available to you. You will not need to look at all pieces of documentation that have been prepared in order to use the datasets efficiently.

There are three main pathways through the documentation:

- Marked-up questionnaires for each wave – you would use these if you wanted to find the exact question format or to find other questions asked in a particular module;
- Subject-level coding framework for each wave – you would use this if you were interested in a couple of different topics or to find what variables are available for a particular subject;
- Cross-wave variable listing – you would use this if you were frequently using variables across the various waves, and were happy to find out the codes used when you started using the variables.

The coding frameworks have been provided on the DVD (as .pdf documents) as well as an on-line data dictionary.

You should also consider which files you want to print out and which you are happy to look at electronically. You might want to print a couple of pages from the marked-up questionnaire and look at the rest of the files on screen where there are search functions available.[27]

While frequencies of the variables have been provided, it is expected that you might only refer to these in the early stages of an analysis (for example, how many employed people do we have in the sample at wave 1, or what are the codes used for question R3).

The previous chapters of this manual provide an overview of the topics covered in the questionnaires and the derived variables created. The documentation is described in more detail below.

5.2 Marked-Up Questionnaires

Beside each question in the questionnaires, the associated variable name has been added. Derived variables are not included, only the variables that relate directly to the question asked.

---

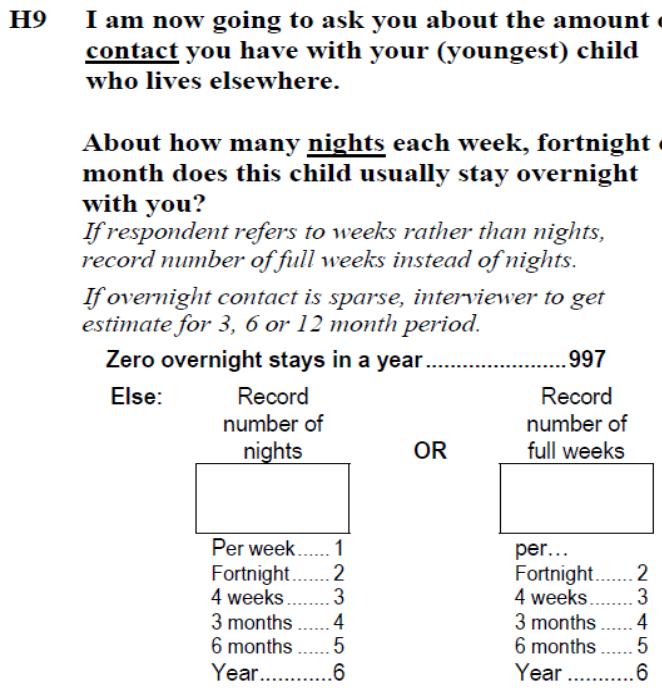
[27] In Adobe Acrobat, you would begin a search by clicking on the button that looks like this: 

or  .

For waves 1-12, paper questionnaires were used (though only as a back-up to CAPI in waves 9–12), therefore the marked up questionnaires are an edited version of these questionnaires. See Figure 5.1 for an example.

In wave 13, the paper backup questionnaires were dropped, thus the marked up questionnaires provided for the following waves are a paper representation of the CAPI script. See Figure 5.2 for an example.

Figure 5.1: Example of the marked-up questionnaires, waves 1-12



H9 **I am now going to ask you about the amount of <u>contact</u> you have with your (youngest) child who lives elsewhere.**

About how many <u>nights</u> each week, fortnight or month does this child usually stay overnight with you?

If respondent refers to weeks rather than nights, record number of full weeks instead of nights.

If overnight contact is sparse, interviewer to get estimate for 3, 6 or 12 month period.

Zero overnight stays in a year.....997

Else:

Record number of nights		Record number of full weeks
	OR	
Per week..... 1		per…
Fortnight..... 2		Fortnight..... 2
4 weeks..... 3		4 weeks..... 3
3 months 4		3 months 4
6 months 5		6 months 5
Year.....6		Year 6

ancngth H9 Youngest non-resident child overnight stays – answered nights or weeks

ancngtn H9 Youngest non-resident child overnight stays – number of nights

ancngtnp H9 Youngest non-resident child overnight stays – nights – period

ancngtw H9 Youngest non-resident child overnight stays – number of weeks

ancngtwp H9 Youngest non-resident child overnight stays – weeks - period

Figure 5.2: Example of the marked-up questionnaires, waves 13 onwards

G9b. About how many nights each week, fortnight or month does [IF 'AgeYoungestElsewhere' not 98 or 99: ['NameYoungestElsewhere'] / ELSE **this child**] **usually stay overnight with you?**

INTERVIEWER NOTE: *If respondent refers to weeks rather than nights, record number of full weeks instead of nights. If overnight contact is sparse, interviewer to get estimate for 3, 6 or 12 month period.*

[DISPLAY GRID]

Number [1-182/RF/DK] [mncngtn] [mncngtw]
Nights or Weeks [Nights/Weeks/RF/DK] [mncngth]
Frequency [mncngtnp] [mncngtwp]

	Number		Nights or weeks		Frequency	
❍	[1-182]	❍	Nights	❍	Per week	[1]
❍	Refused	❍	Weeks	❍	Fortnight	[2]
❍	Don't know	❍	Refused	❍	4 weeks	[3]
		❍	Don't know	❍	3 months	[4]
				❍	6 months	[5]
				❍	Year	[6]
				❍	Refused	[8]
				❍	Don't Know	[9]

❍ Zero overnight stays in a year [997]

5.3 Variable Listings

5.3.1 Subject Listing

The subject listing includes the variables of all files together in one listing by subject. There is an index at the beginning and the broad subject name is at the top of each page to help you navigate through the very long document. There is one listing per wave. See Figure 5.3 below.

Figure 5.3: Example of the subject listing

File	Question	Variable	Data Item	Categories
RP	PQ H9	ANCNGTH	Youngest non-resident child overnight stays - answered nights or weeks	
				0 Zero overnight stays per year
				1 Nights
				2 Weeks
Population: Parents of non resident children aged <= 17				
RP	PQ H9	ANCNGTN	Youngest non-resident child overnight stays - number of nights	
				[Nights]
Population: Parents of non resident children aged <= 17				

5.3.2 Cross-Wave Variable Listing

The cross-wave variable listing is probably the most useful tool of all the documentation options. It provides information on the file where the variable can be found, the label and in which wave(s) the variable has been asked. For the particular example provided in Figure 5.4, we can see that these questions have changed from

section H in wave 1 to section G in later waves, and that the question numbering has changed slightly in later waves.

Figure 5.4: Example of the cross-wave variable listing (wave 7-14 truncated)

CHILDREN - Non-Resident Children			Wave					
File	Variable	Data Item	1	2	3	4	5	6
RP	_ncngth	Youngest non-resident child overnight stays - answered nights or weeks	PQ H9	PQ G9	PQ G9b	PQ G9b	PQ G11b	PQ G9b
RP	_ncngtn	Youngest non-resident child overnight stays - number of nights	PQ H9	PQ G9	PQ G9b	PQ G9b	PQ G11b	PQ G9b
RP	_ncngtnp	Youngest non-resident child overnight stays - nights - period	PQ H9	PQ G9	PQ G9b	PQ G9b	PQ G11b	PQ G9b
RP	_ncngtw	Youngest non-resident child overnight stays - number of weeks	PQ H9	PQ G9	PQ G9b	PQ G9b	PQ G11b	PQ G9b
RP	_ncngtwp	Youngest non-resident child overnight stays - weeks - period	PQ H9	PQ G9	PQ G9b	PQ G9b	PQ G11b	PQ G9b

5.3.3 Selected Standard Classifications

A standard classification listing has also been provided. For the General Release, this includes a list of country codes and the 2-digit industry and occupation codes. For the Unconfidentialised Release, this includes codes for the country, geography, occupation and industry variables.

5.4 Frequencies

The frequencies are a simple listing of the categories for each question and the number of cases falling into each category. Figure 5.5 provides an example of the listing. The frequencies are produced in Stata.

Figure 5.5: Example of the frequencies

```
-> tabulation of ancngtnp if responding_person

 H9 youngest non-resident child |
     overnight stays - nights - |
                         period |      Freq.     Percent        Cum.
--------------------------------+-----------------------------------
                 [-1] Not asked |     13,667       97.84       97.84
                       [1] Week |         62        0.44       98.28
                  [2] Fortnight |        104        0.74       99.03
                    [3] 4 weeks |         55        0.39       99.42
                   [4] 3 months |         10        0.07       99.49
                   [5] 6 months |          2        0.01       99.51
                    [6] Year    |         69        0.49      100.00
--------------------------------+-----------------------------------
                          Total |     13,969      100.00
```

5.5 On-line Data Dictionary

The searchable On-line Data Dictionary can be accessed via the HILDA website:

http://www.melbourneinstitute.com/hildaddictionary/onlinedd/Default.aspx

This browser interface is designed to provide easy access to HILDA variable descriptors. The database provides the user with the same information available in

the HILDA coding frameworks (.pdf) and and also includes the questionnaire text and frequencies for most variables.

The On-line Data Dictionary allows users to search HILDA metadata:

- by keyword,
- by subject area, or
- by variable name.

A help page (accessed by clicking help/information link from the menu at the right of the page) provides instructions on how to use the system along with example screen shots.

Any feedback or comments are welcome.

6 DATA QUALITY ISSUES

6.1 Summary of Data Quality Issues

There are various technical and discussion papers that discuss the data quality issues that we are aware of in the datasets. These papers can be found on the HILDA website. A summary of these data quality issues is provided in Table 6.1. As further research is carried out on a variety of data quality issues, this table will be added to.

Table 6.1: Summary of the data quality issues in the HILDA data

Topic / variable	*Problem*	*Where to get more information*
Sample Representativeness		
Wave 1 non-response	The wave 1 response rate was 66% and non-respondents were more likely to be living in Sydney, male or unmarried, aged 20 to 24 or 65+, or born in a non-English speaking country.	Watson and Wooden (2002a, pp.3-8)
Attrition	The attrition rates from wave 2 are provided in Table 8.27. Attritors are more likely to be living in Sydney and Melbourne; aged 15 to 24 years; single or living in a de facto marriage; born in a non-English-speaking country; Aboriginal or Torres Strait Islander; living in a flat, unit or apartment; of relatively low levels of education; unemployed; or working in blue-collar or low-skilled occupations.	Watson and Wooden (2006); Watson and Wooden (2004a, pp.2-14)
	A discussion of the factors that influence the decision to re-engage using data from three different separate household panel studies conducted at different times in three different countries (Australia, Britain and Germany).	Watson and Wooden (2011)
SCQ Response	A discussion of the SCQ response rates achieved, the strategies used to improve these rates and the factors associated with response.	Watson and Wooden (2015)
Missing data		
Item non-response		
General level of item non-response	Overall, the level of non-response in the HF, HQ and PQs is generally relatively low – less than 2 per cent. The item non-response rates in the SCQ are higher – averaging around 2.5 to 2.8 per cent.	Watson and Wooden (2002a, p9); Watson and Wooden (2004a, p15)
Missing income data	10-16 per cent of respondents did not provide details for all financial year income components, resulting in 22 to 29 per cent of households with missing financial year income. Analysis of wave 1 data shows that individuals with missing financial year information were more likely to be female; living in Sydney and rural WA; or attach a high importance to their financial situation. The income data is imputed	Sections 4.20.2 and 6.2; Watson and Wooden (2002a, pp.9-12); Hayes and Watson (2009)

Topic / variable	*Problem*	*Where to get more information*
Missing wealth data	14 per cent of respondents did not provide all person-level wealth details and 20 per cent of households did not provide all household-level wealth details, resulting in 39 per cent of households with missing wealth data (in wave 2) and 29 per cent in wave 6. The wealth data is imputed.	Sections 4.21.2 and 6.2 Watson and Wooden (2004a, pp.21-24); Hayes and Watson (2009)
Missing expenditure data	The item non-response rate for the expenditure items collected in the HQ is less than 2 per cent. For expenditure components collected in the SCQ from wave 5 onwards, the household-level item non-response is 15-20 per cent (primarily due to SCQs not being returned rather than missing data on a returned SCQ). The household-level expenditure data is imputed.	Sections 4.22.1 and 6.4; Sun (2010)
Family background	People living with both parents in wave 1 were not asked the family background questions on the assumption that this could be derived from the parent's interview. However, not all parents responded or it was impossible to determine what the parent was doing when the respondent was aged 14.	Watson and Wooden (2002a, pp.12-13)
Permanently unable to work	452 respondents were incorrectly coded as 'permanently unable to work' at D21 in the PQ (interviewers were meant to check back to D6, but many used the response at D20 to code D21). As a result, the questions for those not in paid employment were not asked (such as whether looking for work, main activity, whether they would like work, and whether they have retired). Note that the retirement questions were asked in later waves.	Watson and Wooden (2002a, pp.13-14)
Transition to CAPI and a new fieldwork provider	An increase in the proportion of 'refused' and 'don't know' responses has been identified. This is due to the combined effect of offering an explicit 'refused' and 'don't know' option for each question and the difficulty of referring to a previous question	Watson (2010)
Incomplete households		
Part-responding households	8 to 10 per cent of households are partially responding (that is, some but not all adults in the household provide an interview). When using derived variables that sum information across individuals in the household (for example, income or wealth variables), there will be more missing data.	Watson and Wooden (2002a, p14);
Accuracy of the data		
Questionnaire design issues		

Topic / variable	*Problem*	*Where to get more information*
Child care costs	The child care grids in the HQ are very complex and require the parent to split the costs by the type of children (those of school aged and those not yet at school). There is some (small amount of) evidence that some respondents struggled to do this, with the same amount being reported for the two groups of children when the number of children in each group is not the same.	Watson and Wooden (2002a, p15)
Current wages and salaries	There are some respondents who reported having current wages and salaries but who: • did not report having a job (13 respondents in wave 1). • were recorded as an employer (414 respondents in wave 1). • There were also some respondents who did not report having current wages and salaries but who: • were recorded as an employee of their own business (126 respondents in wave 1). • were recorded as an employee (16 respondents in wave 1). There may be some circumstances that can explain these apparent discrepancies (for example, a spouse who have income from the family business but who do not actually work in the business).	Watson and Wooden (2002a, pp.5-16)
Trade union membership	'Employee associations' were included in the question about trade union membership, resulting in a high rate of positive answers for managers and professionals. This does not match the ABS definition of trade union membership (though this was stated to be the case in our documentation for Release 1-6).	Wooden (2009a)
Employment and education calendar	In wave 1, we tried to separate jobs out based on whether they were full or part time and asked the interviewers to record job numbers so we can identify jobs changing between part-time and full-time. However, this was not completed by the interviewers very often and was (mistakenly) not entered by the processing team. Interviewers also did not have sufficient instruction on how to treat breaks in employment (such as long-term leave or infrequent hours). The design of the calendar was modified between wave 1 and 2	Watson and Wooden (2002a, p16)

Topic / variable	*Problem*	*Where to get more information*
Marital status	The HF and PQ in wave 1 asked whether respondents were 'legally' married with the intent of asking about a 'registered' marriage. We suspect some defacto couples reported they were 'legally' married because they have certain legal rights under the Australian legal system. From wave 2, we have revised the questions to talk about 'registered' marriages. As a result, there may be inconsistencies between wave 1 and later waves.	Watson and Wooden (2002a, p16)
Time use	While we undertake a large amount of checking and editing on the time use questions in the SCQ, it is likely that problems remain. The problem areas are: Excessive hours reported suggest respondents find it difficult to think in terms of hours in a week. The same hours may be recorded against multiple tasks if respondents are doing more than one thing at a time (e.g. looking after children while doing the housework). Some confusion was caused by the layout of the boxes as some respondents tried to record both hours and minutes. The design of the time use question has undergone some revision since wave 1 to try to address these problems, but it is expected that errors still occur	Watson and Wooden (2002a, p17)
Moving house	In wave 2, we asked movers when they moved to their current address, but did not ask when they left their previous address. For people who move twice in a year, we do not know the exact length of tenure at the former address. The questionnaire was amended in wave 3.	Watson and Wooden (2004a, p30)
Duration of defacto relationship	In waves 2 and 3, we asked those completing the NPQ how long their most recent defacto relationship started and how long it lasted. This is inconsistent with wave 1, where we asked about the first such relationship and from wave 4 these questions have been reverted to the original ones.	Watson and Wooden (2004a, p30)
Sex	A small number of individuals had their sex corrected in the next wave (in wave 2, 37 people's sex was corrected). Note that the latest sex and date of birth is applied back through the earlier waves. This may lead to some subsequent inconsistencies in the question skips that rely on age or sex.	Watson and Wooden (2004a, pp.25-26)
CAPI errors		

Topic / variable	*Problem*	*Where to get more information*
Introduction of CAPI	In wave 9, an error was identified in the data after all the interviews were completed and we were preparing for the data release. The most serious error occurred in the Household questionnaire resulting in 51 households missing the non-employment related childcare questions and 83 (including the previous 51) missing the child health questions. Two other minor skip problems have also been identified - one involves seven cases at K66 (in the NPQ) and the other three (at A11 in the CPQ). All these cases, the affected questions have been set to Refused/Not stated (-4) in the data.	Watson (2010)
Data collection issues		
Date of birth	A relatively small number of corrections are applied to a person's date of birth in the next wave. (In wave 2, there were 50 people with a major change to their date of birth and 451 with a minor change. In later years, the number of changes was less and usually to replace dates of birth that were missing for new entrants to the household.) Note that the latest sex and date of birth is applied back through earlier waves.	Watson and Wooden (2004a, pp.25-26)
Interviewer observations	Interviewers were required to complete observations of the dwelling and of the PQ interview. Unfortunately, not all interviewers completed this. For example, in wave 1, about 0.1-0.4 per cent of cases had missing values	Watson and Wooden (2002a, p20)
Mode effects and social desirability / acquiescence bias	Differences observed are quite small in absolute terms. Items tested: • difference between reported health in PQ and SCQ in wave 1; • whether responses tempered by presence of other adults during the interview.	Watson and Wooden (2002a, pp.21-22)

Topic / variable	*Problem*	*Where to get more information*
Working hours	In wave 1, respondents were asked to compare their current hours with those a year ago. 26 cases reported hours a year ago that were inconsistent with their answer of whether they were more or less. The answer to the later was changed to reflect the former. Similarly, a small number of cases (in wave 1, there were 7) were inconsistent with their answer to whether they wanted to work more or less and the number of hours they wanted to work. Generally the answer to whether they wanted more or less hours was altered. For those with two jobs, some recorded more hours in all jobs that was less than their main job (in wave 1, there were 13). The hours in all jobs were usually set to -6 (unbelievable value). For those who work at home, some recorded more hours worked at home than in their main job (in wave 1, there were 33). Where this could not be resolved by looking at the hours worked in all jobs for multiple job holders, the hours worked at home were usually set to -6 (unbelievable value).	Watson and Wooden (2002a, p19)
Transition to CAPI and a new fieldwork provider	A discussion of the key differences in operations and an assessment on the impact on data quality.	Watson (2010)
Experimental change from PAPI to CAPI	A report on the trial of the CAPI collection more undertaken in the 2007 test sample	Watson and Wilkins (2011)
The Development of Cognitive Ability Measures in the HILDA Survey	A discussion on the obstacles to, and problems with, the inclusion in the HILDA Survey of measures designed to assess the level of cognitive ability among respondents in W12.	Mark Wooden, Andrew Mackinnon, Bryan Rodgers and Tim Windsor (2012)
The Impact of Computer-Assisted Interviewing on Interview Length	This paper discusses the effects of CAPI and dependent data on interview length in the HILDA survey	Watson and Wilkins (2012)
Death Register Matching	This paper outlines the outcomes from matching the HILDA Survey to the death register.	Watson and Summerfield (2014)
Sexual Identity	The broad aim of this paper is to introduce users and potential users of the HILDA Survey data to the question on sexual identity that was included in wave 12 with a view to highlighting the strengths and weaknesses of the data collected.	Wooden (2014a)
Physical Activity	This paper: introduces the IPAQ and the types of summary measures it generates; describes its implementation in wave 13 of the HILDA Survey; and reports brief summary statistics from the wave 13 data describing the distribution of responses on the key outcome variables and associations with other health-related variables.	Wooden (2014b)
Coding issues		

Topic / variable	*Problem*	*Where to get more information*
Occupation and industry coding	An analysis of the quality of the occupation coding suggests the error rate in the HILDA Survey is approximately double that of the ABS Labour Force Survey. Similar error rates are expected for industry coding.	Watson and Summerfield (2009)
Cross-form comparisons		
HF and PQ	Few questions are asked more than once. The percentage of cases where the answers differed in wave 1 between HF and PQ: • 10% for long-term health condition; • 6.1% for labour force status; • 0.4% for marital status. Note HF and PQ may be done on different days and answered by different people. Also the questions were not identically worded	Watson and Wooden (2002a, p22)
Cross-wave inconsistencies		
Marital status changes	Respondents are asked whether they changed their marital status since the last wave interviewed. Some report a different status but say there has been no change (for example, there were 258 respondents reporting no changing their marital status since wave 1 but who had a different status). Most of these errors are recall errors but a small number may also be transcription errors by the interviewer.	Watson and Wooden (2004a, p27)
Address changes	Address changes can be identified through either a comparison of actual addresses recorded on the HF undertaken by Nielsen or via a question in the PQ. In wave 2, for example, 119 people indicated in their PQ that they had not changed address, but the address recorded was different and 141 people said they had moved, but the HF address was the same.	Watson and Wooden (2004a, p27)
Employment status changes	Respondents are asked to recall whether they were employed or not at the previous interview. In wave 2, for example, 4.6 of those employed in wave 1 did not recall being employed then and 6.8 per cent of those not employed in wave 1 recalled that they were. A very detailed analysis is given in Goode (2007). The majority of mistakes are made by those who change employment states between interviews. Variables significantly associated with making a mistake are being in full time education, the number of children, the time elapsed between interviews (possibly) and the number of jobs reported in the employment calendar.	Goode (2007); Watson and Wooden (2004a, pp.27-28)

Topic / variable	*Problem*	*Where to get more information*
Calendar matching	There is a two to six month overlap (or seam) in the activity calendar collected each wave. Of those who had at least one job in the calendar seam between waves 1 and 2, 19 per cent provided job spell information that was inconsistent. 1.8 per cent matched within 1 month, 0.7 matched within 3 months, 2.1 matched beyond 3 months and 14.8 per cent had at least one job that could not be matched. The transitions at the seam are at least eight times those not at the seam. The spells most subject to inconsistent reports are spells unlike those reported at the current date of interview, short spells, and from respondents with a complex history. Some limited support was found for reduced inconsistent reports when the interview is conducted face-to-face, the interviewer was the same between waves, or they had greater interview experience. The effect that respondent characteristics had on the likelihood of inconsistent reports varied by spell type. Respondents tended to make the same mistakes over time in terms of dropping or adding spells but not in misplacing spells.	Watson and Wooden (2004a, pp.28-29); Watson (2009)
Representativeness		
General	Generally, the estimates are quite close for labour market, housing, demographic and health variables.	Watson and Wooden (2002a, pp.24-26)
Income	Compared to the ABS Survey of Income and Housing Costs, HILDA reports higher wages and salaries, and investment income.	Watson and Wooden (2004a, pp.17-21) Note income estimates in Watson and Wooden (2002a, pp.24-26) are not imputed so not a fair comparison.
Wealth	Comparison with ABS and RBA suggest the wave 2 HILDA data slightly understates the volume of financial assets, is much closer to the RBA than the ABS for non-financial assets, and is much lower (20 per cent) on debts than the ABS and RBA estimates.	Watson and Wooden (2004a, pp.22-24)
Expenditure	Comparison with ABS Household Expenditure Survey suggests that most of the consumer durables, private health insurance, medical expenses, clothing, motor vehicle fuel, home renovation and holidays are more than 10 per cent different to the HILDA estimates. The other expenditure items measures are more similar. Note that there are major differences in how the expenditure data are collected in the two surveys. This is likely lead to differences in the distributions of the expenditure items, but for many items, the mean value should in principle be the same.	Wilkins and Sun (2010)

Topic / variable	*Problem*	*Where to get more information*
Height and weight	HILDA compares reasonably well with the ABS National Nutrition Survey but HILDA has a greater proportion of obese people but also lower item non-response.	Wooden et al. (2008)
Kessler-10	Differences in mode of administration most likely explain differing estimates from HILDA, the ABS National Health Survey and the ABS National Surveys of Mental Health and Wellbeing.	Wooden (2009b)

Some more detailed information on the amount of missing income, wealth and expenditure data and the extent of the imputation is provided below.

6.2 Missing Income Data

The percentage of cases with missing income data are provided in Table 6.2. For most income variables, the percentage of missing income falls each wave for the first eight waves. Part of the reason for this decline may be because respondents are becoming more comfortable with the survey. We also observe an increase in the proportion of missingness in wave 9 with the introduction of CAPI, perhaps because it is harder to skip back to earlier questions when the information becomes known (for example, when the respondent later asks their partner). For respondents, the variables with the highest percentage of missing cases (of those with income from the given source) are still business income, investments and private transfers.

Table 6.3 shows how much of the mean income was imputed for each wave. For example in wave 8, 4.8 per cent of total financial year income was imputed in the responding person file, compared to 7.7 per cent in wave 1. Including the imputed income totals for non-respondents within responding households (but excluding children), the percentage of total financial year income imputed for enumerated persons is 13.1 per cent in wave 8.

Table 6.2: Proportion of cases with missing income data, waves 1 - 14 (per cent)

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Responding person file (non-zero cases only)														
Current income (per week)														
Wages and salaries - main job	4.6	3.1	2.8	2.7	2.4	2.2	2.6	2.8	4.0	3.6	3.7	3.2	3.6	2.8
Wages and salaries - other jobs	15.9	13.9	13.2	13.0	12.9	11.1	10.9	17.5	13.0	10.9	11.3	11.7	11.8	11.4
Australian Gov't pension	5.0	3.1	3.0	2.8	2.3	1.5	2.2	3.9	5.9	4.1	5.3	4.7	4.6	3.5
Australian Gov't parenting payment	14.2	4.8	5.3	4.7	4.0	2.7	3.8	6.7	6.6	4.2	0.0	0.0	0.0	2.1
Australian Gov't allowances	9.8	4.0	4.2	4.3	3.7	2.7	3.7	7.3	10.9	6.1	8.1	6.1	5.9	4.8
Non-income support other than family payment	0.9	0.0	0.0	0.0	0.0	0.0	0.5	0.0	3.0	0.7	2.0	1.7	3.9	1.4
Other domestic gov't benefits and Australian Gov't NEI to classify	16.7	4.2	0.0	4.3	0.0	0.0	4.5	3.2	15.8	17.6	4.9	5.6	2.8	7.1
Financial year income														
Wages and salaries	7.9	6.9	5.5	3.8	4.5	4.6	5.1	4.6	5.9	5.7	5.4	4.7	4.8	4.1
Australian Gov't pension	1.4	1.7	1.0	1.5	1.1	0.9	1.0	1.9	3.7	3.5	3.9	3.7	3.9	2.3
Australian Gov't parenting payment	2.1	2.7	1.1	2.9	2.0	1.5	1.2	3.2	6.3	4.5	6.5	7.1	6.4	4.2
Australian Gov't allowances	3.0	2.1	2.1	2.6	2.0	0.9	1.2	1.9	4.6	4.8	5.3	6.3	4.9	6.3
Non-income support other than family payment	1.0	1.1	0.8	0.9	0.0	0.0	0.0	0.7	3.2	1.2	1.6	3.0	2.0	1.4
Other regular public payments	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Other domestic gov't benefits and Australian Gov't NEI to classify	12.0	5.5	0.0	5.6	0.0	0.0	1.5	6.0	7.1	12.5	0.0	5.6	0.0	0.0
Foreign gov't pensions	0.5	2.7	0.0	0.5	2.4	0.5	1.0	2.2	2.3	4.4	5.7	1.8	5.5	1.3
Business income	29.1	28.6	27.4	19.4	21.7	18.6	19.8	18.7	20.3	19.5	17.6	18.3	16.6	13.3
Investments	19.4	17.8	14.2	11.4	11.8	13.3	12.5	12.3	14.8	15.4	16.7	15.3	14.9	14.7
Interest income	19.5	18.6	13.9	11.0	11.3	12.8	11.6	11.2	14.4	15.4	16.3	15.0	14.7	13.4
Dividends and royalties	14.6	14.5	11.9	9.2	10.2	11.3	11.3	11.3	13.5	13.4	14.2	13.0	11.7	11.9
Rent income	20.3	14.7	14.9	11.3	10.5	10.3	10.2	10.5	11.1	10.3	13.6	11.7	12.7	12.6
Regular superannuation	5.7	3.9	3.5	3.6	4.5	3.6	3.6	3.6	4.4	3.9	5.2	4.4	4.8	3.4
Regular workers compensation insurance	9.7	10.3	2.1	8.8	7.5	6.5	7.1	6.6	8.8	4.3	10.7	9.6	8.8	9.0
Regular private transfers	6.9	14.1	9.7	8.8	12.3	8.6	11.4	12.5	12.4	10.6	13.0	8.0	8.5	7.8
Redundancy and severance payments	0.0	2.0	2.0	1.0	1.0	3.1	2.4	2.6	0.6	0.7	1.8	1.3	0.8	1.0
Irregular income other than redundancy	1.3	2.8	2.2	3.1	0.9	4.5	4.4	2.9	9.1	5.2	6.9	5.5	4.9	6.9
Total FY income	15.8	14.9	12.2	9.6	10.6	10.4	10.4	10.6	12.3	12.2	13.0	12.0	11.7	10.9
Enumerated Persons (zero and non-zero cases, excluding children)														
Current income (per week)														
Wages and salaries - main job	10.0	8.6	7.9	8.3	7.3	7.0	7.3	7.3	7.3	7.1	7.5	7.2	7.6	6.6
Wages and salaries - other jobs	8.4	7.6	7.0	7.5	6.6	6.3	6.4	6.6	5.6	5.6	6.0	5.9	6.2	5.5

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Australian Gov't pension	8.5	7.5	6.9	7.3	6.4	6.0	6.3	6.5	6.1	5.9	6.4	6.3	6.6	5.7
Australian Gov't parenting payment	8.3	7.1	6.6	7.0	6.1	5.9	6.0	6.0	5.2	5.2	5.5	5.5	5.7	5.1
Australian Gov't allowances	8.4	7.3	6.7	7.1	6.2	5.9	6.1	6.1	5.7	5.5	6.0	5.8	6.1	5.3
Non-income support other than family payment	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.1	5.1	5.5	5.5	5.8	5.1
Other domestic gov't benefits and Australian Gov't NEI to classify	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.1	5.1	5.5	5.5	5.7	5.1
Financial year income														
Wages and salaries	12.1	10.9	9.6	9.0	8.7	8.6	8.9	8.6	8.7	8.6	8.7	8.3	8.6	7.5
Australian Gov't pension	7.9	7.3	6.6	7.1	6.2	6.0	6.1	6.1	5.6	5.7	6.2	6.1	6.4	5.5
Australian Gov't parenting payment	7.8	7.1	6.5	7.0	6.1	5.8	5.9	5.9	5.2	5.3	5.7	5.7	5.9	5.2
Australian Gov't allowances	7.9	7.2	6.6	7.1	6.1	5.8	6.0	5.9	5.3	5.5	5.9	6.0	6.2	5.6
Non-income support other than family payment	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.1	5.1	5.5	5.5	5.8	5.1
Other regular public payments	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.0	5.1	5.5	5.5	5.7	5.0
Other domestic gov't benefits and Australian Gov't NEI to classify	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.0	5.1	5.5	5.5	5.7	5.0
Foreign gov't pensions	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.1	5.2	5.5	5.5	5.8	5.1
Business income	10.3	9.6	9.0	8.7	8.0	7.4	7.5	7.3	6.6	6.6	6.9	6.9	7.0	6.0
Investments	15.3	14.1	12.1	11.3	10.6	11.0	11.0	10.8	11.0	11.3	12.3	11.7	11.7	11.0
Interest income	12.0	11.2	9.5	9.3	8.6	8.9	8.9	8.9	8.9	9.3	10.1	9.8	9.9	8.8

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Dividends and Royalties	11.5	10.7	9.4	9.0	8.4	8.4	8.5	8.2	7.8	7.8	8.2	7.9	7.1	6.4
Rent income	9.2	8.3	7.7	7.8	6.9	6.7	6.9	6.8	6.1	6.1	6.8	6.6	7.0	6.4
Regular superannuation/annuity	7.9	7.2	6.6	7.0	6.2	6.0	6.1	6.0	5.3	5.4	5.8	5.8	6.1	5.3
Regular workers compensation insurance	7.8	7.1	6.4	6.9	6.1	5.8	6.0	5.8	5.1	5.1	5.6	5.5	5.8	5.1
Regular private transfers	8.0	7.7	7.0	7.4	6.8	6.3	6.5	6.5	5.7	5.8	6.3	5.9	6.3	5.5
Redundancy and severance payments	7.7	7.0	6.4	6.9	6.0	5.8	5.9	5.8	5.0	5.1	5.5	5.5	5.7	5.0
Irregular income other than redundancy	7.7	7.0	6.5	6.9	6.0	5.9	6.0	5.8	5.2	5.2	5.6	5.6	5.8	5.2
Total FY income	21.4	20.1	17.2	15.4	15.5	15.1	15.2	15.4	16.1	16.1	17.2	16.2	16.2	14.9
Households (zero and non-zero cases)														
Current income (per week)														
Wages and salaries - main job	14.2	12.3	11.2	12.2	10.9	10.4	11.1	11.2	11.4	11.2	11.9	11.3	12.1	10.4
Wages and salaries - other jobs	11.8	10.8	10.0	10.8	10.0	9.3	9.7	10.0	8.9	8.9	9.5	9.3	9.8	8.7
Australian Gov't pension	12.1	10.6	9.8	10.6	9.5	8.8	9.5	9.8	9.7	9.4	10.4	9.9	10.4	9.0
Australian Gov't parenting payment	11.7	10.0	9.2	10.0	9.1	8.5	9.0	9.0	8.2	8.3	8.7	8.4	9.1	8.0
Australian Gov't allowances	11.8	10.2	9.4	10.2	9.2	8.6	9.2	9.3	9.0	8.8	9.5	9.0	9.6	8.4
Non-income support other than family payment	10.6	9.7	8.9	9.8	8.8	8.4	8.9	8.7	7.9	8.1	8.7	8.5	9.1	7.9
Other domestic gov't benefits and Australian Gov't NEI to classify	10.6	9.8	8.9	9.8	8.8	8.4	8.9	8.7	7.9	8.1	8.7	8.4	8.9	7.9

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Financial year income														
Wages and salaries	17.0	15.7	13.8	13.0	12.8	12.8	13.4	12.9	13.4	13.6	13.7	12.9	13.5	11.8
Australian Gov't pension	10.9	10.2	9.2	10.2	9.2	8.7	9.2	9.2	8.9	9.1	9.9	9.5	10.1	8.6
Australian Gov't parenting payment	10.8	9.9	9.0	10.0	9.0	8.5	8.9	8.9	8.2	8.3	9.0	8.8	9.3	8.1
Australian Gov't allowances	11.0	10.1	9.2	10.1	9.1	8.5	9.0	8.9	8.3	8.7	9.4	9.3	9.7	8.8
Non-income support other than family payment	10.6	9.7	8.9	9.8	8.8	8.4	8.8	8.7	7.9	8.1	8.7	8.5	9.0	7.9
Other regular public payments	10.6	9.7	8.9	9.8	8.8	8.4	8.8	8.7	7.8	8.1	8.7	8.4	8.9	7.9
Other domestic gov't benefits and Australian Gov't NEI to classify	10.6	9.7	8.9	9.8	8.8	8.4	8.9	8.7	7.9	8.1	8.7	8.4	8.9	7.9
Foreign gov't pensions	10.6	9.8	8.9	9.8	8.9	8.4	8.9	8.7	7.9	8.2	8.8	8.4	9.0	7.9
Business income	14.4	13.3	12.6	12.3	11.7	10.6	11.2	11.0	10.2	10.3	10.7	10.6	10.9	9.4
Investments	21.2	19.8	16.9	16.2	15.6	16.0	16.2	16.0	16.7	17.4	19.2	18.1	18.4	17.5
Interest income	16.9	16.1	13.6	13.6	12.7	13.0	13.4	13.4	13.9	14.4	16.1	15.3	15.8	14.2
Dividends and Royalties	16.2	15.1	13.2	13.0	12.4	12.4	12.6	12.1	12.2	12.4	13.1	12.4	11.3	10.5
Rent income	12.7	11.3	10.7	11.1	10.2	9.7	10.2	10.2	9.4	9.5	10.6	10.2	10.8	9.9
Regular superannuation/annuity	11.1	10.0	9.2	10.1	9.2	8.7	9.2	9.1	8.4	8.5	9.3	8.9	9.6	8.3
Regular workers compensation insurance	10.8	9.9	8.9	9.9	9.0	8.5	9.0	8.8	8.0	8.1	8.9	8.6	9.1	8.0
Regular private transfers	11.1	10.9	9.9	10.6	10.1	9.2	9.9	9.9	9.1	9.3	10.2	9.2	9.9	8.7

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Redundancy and severance payments	10.6	9.7	8.9	9.8	8.9	8.4	8.9	8.7	7.9	8.1	8.7	8.4	8.9	7.9
Irregular income other than redundancy	10.6	9.8	9.0	9.9	8.9	8.5	8.9	8.8	8.1	8.2	8.9	8.6	9.1	8.1
Total FY income	29.5	28.0	24.1	21.9	22.3	21.6	22.1	22.5	24.1	24.7	26.0	24.7	25.1	23.3

Table 6.3: Mean financial year income ($) (including imputed values) and per cent of mean income imputed, waves 1 - 14 (weighted)

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Responding persons														
Wages and salaries														
Mean ($'000)	20.9	21.4	22.1	22.9	24.6	26.4	28.7	30.4	31.3	33.0	33.1	35.0	36.1	36.8
Per cent imputed	5.7	4.8	3.8	2.9	3.4	3.1	3.3	3.1	4.0	4.0	3.7	3.3	2.8	2.3
Total income														
Mean ($'000)	27.6	28.6	29.5	30.8	33.1	35.7	38.2	40.2	40.9	43.1	44.0	46.1	47.7	49.5
Per cent imputed	7.7	7.3	5.8	4.6	4.8	4.6	5.0	4.8	5.7	5.5	5.5	5.0	4.3	3.9
Enumerated persons														
Wages and salaries														
Mean ($'000)	21.0	21.5	22.2	22.9	24.5	26.4	28.7	30.5	31.6	33.0	33.4	35.0	36.5	37.0

Variable	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Per cent imputed	15.3	15.4	14.7	13.5	12.0	11.6	12.3	12.7	11.9	11.9	11.1	10.3	10.2	9.2
Total income														
Mean ($'000)	27.6	28.6	29.3	30.7	32.7	35.4	37.9	40.0	40.9	42.8	44.0	45.9	47.7	49.3
Per cent imputed	15.9	16.5	15.1	13.9	12.7	12.3	13.2	13.1	12.6	12.5	11.8	11.3	11.0	10.1
Households														
Wages and salaries														
Mean ($'000)	42.8	44.0	45.7	47.3	50.6	54.7	59.5	63.4	65.7	68.7	71.2	75.9	78.5	79.5
Per cent imputed	15.3	15.4	14.7	13.5	12.0	11.6	12.3	12.7	11.9	11.9	11.1	10.3	10.2	9.2
Total income														
Mean ($'000)	56.2	58.5	60.2	63.3	67.6	73.5	78.7	83.0	85.1	89.2	93.7	99.4	103.0	105.9
Per cent imputed	15.9	16.5	15.1	13.9	12.7	12.3	13.2	13.1	12.6	12.5	11.8	11.3	11.0	10.1

6.3 Missing Wealth Data

The percentage of cases with missing wealth data are provided in Table 6.4. This table has two columns for each wave to highlight the percentage of respondents who answered the wealth question with a wealth band.[28] Wealth bands are strictly adhered to in the imputation of any wealth value (that is the imputed value must fall within the reported band) and greatly improve the quality of imputation. Treating cases where a wealth band is available as missing unfairly over represents the scope of the missingness so both situations have been provided. Missing cases for responding person and household level wealth items are reported as a percentage of non-zero cases and missing cases to more clearly show the extent of the problem. However, not all missing cases required a non-zero impute (most cases do but for some it is unknown if they have the asset or debt and they can receive a zero impute) so the percentages given are a slight overestimation.

For most wealth variables, the percentage of missing wealth falls between wave 2 and wave 6. Part of the reason for the decline may be because respondents are becoming more comfortable with the survey, though for some variables we note an increase in missingness in wave 10. In some situations where a wealth band option has been introduced, or an existing wealth band has been continued, there has been an increased percentage of missing values (when counting the wealth band as missing data). For respondents, the variables with the highest percentage of missing cases are superannuation for retirees and those not retired. At the household level the variables with the largest amount of missingness are those for trust funds, life insurance, business debt and business value. Each of these household level items are for situations where only a small amount of households actually have the asset or debt so the actual number of cases to be imputed is quite small.

When treating wealth band information as a response, nearly 39 per cent of wave 2 households have some component of net worth missing. In subsequent waves this is around 26 to 29 per cent.

[28] A wealth band is two values which the respondent believes their actual value to be within. The bands differ between some variables.

Table 6.4: Cases with missing wealth data including and excluding wealth band responses, waves 2, 6, 10 and 14 (per cent)

	Wave 2		*Wave 6*		*Wave 10*		*Wave 14*	
Variable	*inc. bands*	*excl. bands*	*inc. bands*	*excl. bands*	*inc. bands*	*excl. bands*	*inc. bands*	*excl. bands*
Responding persons (non-zero cases only)								
Joint bank accounts	9.7	-	6.0	-	8.1	-	7.8	
Own bank accounts	4.6	-	3.3	-	3.8	-	3.4	
Superannuation, retirees	20.1	-	19.6	12.2	18.8	14.1	17.0	12.4
Superannuation, not retired	17.0	10.6	27.5	13.6	24.6	12.7	22.3	10.8
HECS debt	10.6	-	7.6	-	10.5	-	12.6	
Joint credit card debt	10.1	-	7.5	-	13.8	-	13.9	
Own credit card debt	3.6	-	3.0	-	3.5	-	4.6	
Other Debt	2.4	-	1.8	-	2.5	-	2.9	
Enumerated persons (zero and non-zero cases)								
Joint bank accounts	11.2	-	8.3	-	8.4	-	8.4	
Own bank accounts	9.8	-	7.9	-	7.6	-	7.3	
Superannuation, retirees	7.9	-	6.9	6.5	6.2	5.9	6.2	5.9
Superannuation, not retired	16.8	13.2	23.0	14.4	21.3	13.6	19.6	12.2
HECS debt	7.8	-	6.3	-	6.1	-	6.5	
Joint credit card debt	7.6	-	6.2	-	5.8	-	5.7	
Own credit card debt	7.5	-	6.2	-	5.6	-	5.6	
Other Debt	7.5	-	6.2	-	5.7		5.7	
Household wealth items (non-zero cases only)								
Children's bank accounts	6.2	-	4.6	-	7.0	-	5.4	
Business value	20.1	-	17.5	6.9	20.2	9.4	16.4	8.7
Cash investments	11.6	-	12.3	6.7	35.2	32.1	36.9	33.8
Equity investments	15.3	-	13.3	4.0	12.2	5.2	11.3	4.2
Collectibles	14.0	-	15.1	7.5	8.2	4.0	8.5	5.5
Other property value	4.7	-	0.5	-	5.5	-	4.4	-

Variable	Wave 2		Wave 6		Wave 10		Wave 14	
	inc. bands	*excl. bands*	*inc. bands*	*excl. bands*	*inc. bands*	*excl. bands*	*inc. bands*	*excl. bands*
Life insurance	24.9	-	28.5	14.5	36.2	28.0	37.2	26.1
Trust funds	35.7	-	35.8	23.8	40.1	28.9	34.3	25.2
Vehicles: Value	2.3	-	1.5	-	1.5	-	1.1	-
Business debt	22.9	-	11.6	7.8	13.0	10.7	17.7	14.7
Home Value	7.8	-	4.3	-	5.1	-	4.0	-
Home: All debt	5.4	-	4.2	-	6.5	-	6.2	-
Other property: Debt	7.1	-	5.9	-	8.1	-	7.0	-
Overdue bills: Debt	-	-	2.2	-	4.3	-	4.4	-
Household totals (zero and non-zero cases)								
Financial Assets	36.3	31.6	40.6	24.7	52.5	22.8	50.4	20.4
Non-Financial Assets	10.9	-	7.5	5.3	13.0	12.5	11.6	11.2
Total Assets	41.0	36.6	43.8	27.5	54.4	25.7	52.1	22.7
Financial Liabilities	15.1	-	12.3	12.2	13.2	13.2	13.7	13.7
Net Worth	43.0	38.9	44.9	29.4	55.6	28.3	53.7	26.2

Note: 'Inc. bands' means that for components where a range is asked but the exact amount is unknown, these cases have been included in the count of missing cases; 'excl. bands' means they have not been included in the count of missing cases.

Table 6.5 shows the percentage of cases with missing home value which has generally declined and become relatively stable over time.

Table 6.6 and Table 6.7 give the weighted mean wealth value (including imputed values) along with what percentage of the mean is attributed to imputed values. For all of the household wealth totals presented in Table 6.6, there has been a drop in the percentage imputed between wave 2 and wave 6. Home value (in Table 6.7) showed a general decline in how much the mean was imputed after wave 2.

Comparing the table of missing values against the weighted means show that despite nearly 45 per cent of households in wave 6 missing some component of net worth only 10.5 per cent of the mean net worth wealth value was contributed by imputation.

Table 6.5: Households with missing home value data, waves 1 - 14 (per cent)

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Home value (households)(non-zero cases only)														
Home value	5.9	7.6	5.6	4.0	3.3	4.2	2.6	3.0	3.6	5.0	3.6	3.6	3.4	3.9

Table 6.6: Mean wealth value ($) (including imputed values) and percentage of mean value imputed, waves 2, 6, 10 and 14 (weighted)

	Wave			
Variable	*2*	*6*	*10*	*14*
Households				
Financial assets				
Mean	147,905	212,640	241,998	305,091
Per cent imputed	23.9	24.6	27.3	25.1
Non-financial assets				
Mean	315,813	497,031	543,470	565,942
Per cent imputed	5.7	3.2	4.7	3.7
Total Assets				
Mean	463,718	709,672	785,468	871,034
Per cent imputed	11.5	9.6	11.7	11.2
Total Liabilities				
Mean	66,399	106,724	141,752	159,283
Per cent imputed	5.5	4.5	4.9	5.8
Net Worth				
Mean	397,318	602,947	643,716	711,750
Per cent imputed	12.5	10.5	13.2	12.4

Table 6.7: Mean home value ($'000) (including imputed values) and percentage of mean value imputed, waves 1 - 14 (weighted)

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Households														
Home value														
Mean ($ '000)	176.4	203.6	238.3	265.0	274.1	297.2	317.7	330.6	336.4	354.4	354.9	354.4	356.1	373.9
Per cent imputed	4.8	6.2	4.4	3.3	3.5	4.0	2.4	2.9	3.4	4.8	2.9	3.0	2.9	3.7

6.4 Missing Expenditure Data

The percentage of cases with missing expenditure data is provided in Table 6.8. The greater level of missingness for items collected in the SCQ (in the order of 18 per cent) is primarily due to the people responsible for the household expenditure not completing a PQ (so did not complete an SCQ) or not returning their SCQ, rather than returning the SCQ with incomplete expenditure data. For the items collected in the HQ, only about 1 to 2 per cent of the households have missing expenditure components. Unlike the income and wealth data, there is no obvious declining trend of missing expenditure observed.

Table 6.9 shows the weighted mean value and what the percentage of the mean is attributed to imputed values for some expenditure items. For monthly rent payments, 0.9 per cent of the rent payments were imputed in wave 1 and this drops to 0.6 per cent in wave 14. In comparison, 7.2 per cent of the monthly mortgage repayments were imputed in wave 1 and this falls to 2.6 per cent in wave 6. For the expenditure variables collected in the SCQ, the imputed values contributed more to the mean. For example, 15.8 per cent of the annualised household expenditure on groceries was imputed in wave 14.

Table 6.8: Households with missing expenditure data, wave 1 – 14 (per cent)

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Usual payments/repayments per month (collected in the HQ)														
Rent	0.3	0.4	0.4	0.3	0.3	0.4	0.5	0.5	0.6	0.4	0.5	0.6	0.6	0.5
First mortgage	1.9	1.5	1.4	1.3	1.2	0.9	1.2	1.4	1.7	1.7	1.7	1.7	1.8	1.6
Second mortgage	0.7	0.5	0.5	0.5	0.5	0.5	0.6	0.6	1.0	0.8	0.8	0.8	0.8	0.8
Weekly household expenditure (collected in the HQ)														
Work-related childcare, term-time (school aged)	0.3	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1
Work-related childcare, holidays (school aged)	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.2	0.2	0.2	0.2	0.1	0.1
Work-related childcare (not yet at school)	0.1	0.2	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.2	0.1	0.1	0.2	0.1
Non-work-related childcare (school aged)	-	0.4	0.0	0.2	0.1	0.0	0.1	0.1	0.8	0.1	0.2	0.1	0.2	0.1
Non-work-related childcare (not yet at school)	-	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.9	0.1	0.2	0.2	0.2	0.1
All groceries	1.2	-	1.0	0.9	0.9	-	-	-	-	-	1.7	1.4	1.3	0.9
Groceries for food and drink	2.0	-	1.7	1.2	1.2	-	-	-	-	-	2.0	1.7	1.4	1.2
Meals eaten outside	0.9	-	1.0	0.9	0.8	-	-	-	-	-	1.2	1.2	0.9	0.8
Annualised household expenditure (collected in the SCQ)														
Groceries	-	-	-	-	15.1	14.5	16.5	18.0	18.7	16.2	17.8	17.8	17.9	17.0
Alcohol	-	-	-	-	15.9	15.4	17.1	18.8	19.3	16.9	18.5	18.8	18.7	17.7

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Cigarettes and tobacco	-	-	-	-	16.4	16.2	17.8	19.0	19.7	17.5	19.1	19.3	19.3	18.2
Public transport and taxis	-	-	-	-	16.5	16.9	18.3	19.5	20.1	17.9	19.5	19.5	19.4	18.5
Meals eaten out	-	-	-	-	15.1	15.1	16.8	18.4	19.2	16.7	18.2	18.3	18.4	17.4
Leisure activities	-	-	-	-	15.9	-	-	-	-	-	-	-	-	-
Motor vehicle fuel	-	-	-	-	15.6	14.6	16.6	18.4	19.1	16.5	18.0	18.2	18.2	17.3
Men's clothing and footwear	-	-	-	-	-	15.7	17.5	19.1	19.8	17.2	18.6	18.9	18.5	17.8
Women's clothing and footwear	-	-	-	-	-	16.4	18.1	19.3	20.1	17.7	19.3	19.4	19.5	18.5
Children's clothing and footwear	-	-	-	-	-	17.2	18.3	20.1	20.8	18.4	19.8	19.9	20.1	18.8
Clothing and footwear	-	-	-	-	16.6	-	-	-	-	-	-	-	-	-
Telephone rent and calls	-	-	-	-	16.0	-	-	-	-	-	-	-	-	-
Telephone rent and calls, internet charges	-	-	-	-	-	14.7	16.7	18.2	19.0	16.6	18.1	18.3	18.5	17.7
Holidays and holiday travel costs	-	-	-	-	15.8	15.1	17.3	18.9	19.4	17.2	-	-	-	-
Private health insurance	-	-	-	-	16.3	15.6	17.4	19.3	19.8	17.3	18.2	18.8	18.9	18.0
Other insurances	-	-	-	-	-	15.6	17.7	19.5	20.1	17.8	18.8	19.4	19.6	18.4
Fees paid to health practitioner	-	-	-	-	-	16.1	17.7	19.5	19.8	17.5	18.7	19.4	19.1	18.2
Medicines, prescriptions and pharmaceuticals	-	-	-	-	-	16.0	17.8	19.5	19.9	17.4	18.4	19.1	19.1	18.0
Health care	-	-	-	-	17.3	-	-	-	-	-	-	-	-	-

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Electricity bills	-	-	-	-	16.8	-	-	-	-	-	-	-	-	-
Gas bills	-	-	-	-	16.8	-	-	-	-	-	-	-	-	-
Other heating fuel	-	-	-	-	17.0	-	-	-	-	-	-	-	-	-
Electricity, gas bills and other heating fuel	-	-	-	-	19.2	16.1	17.7	19.6	20.0	17.7	18.8	19.1	19.2	18.4
Repairs, renovation and maintenance to home	-	-	-	-	17.0	16.2	17.7	19.5	20.0	17.7	18.6	19.5	19.4	18.4
Motor vehicle repairs and maintenance	-	-	-	-	16.6	15.8	17.3	19.3	19.7	17.2	18.1	18.8	19.0	18.0
Education fees	-	-	-	-	16.3	16.4	17.8	19.7	19.7	17.5	18.7	19.2	19.6	18.6
Buying brand new vehicles	-	-	-	-	-	16.8	18.1	19.9	19.8	18.0	-	-	-	-
Buying used vehicles	-	-	-	-	-	16.5	18.0	19.9	19.6	17.8	-	-	-	-
Computers and related services	-	-	-	-	-	15.8	17.6	19.4	19.6	17.5	-	-	-	-
Audio visual equipment	-	-	-	-	-	16.2	17.8	19.5	19.6	17.8	-	-	-	-
Household appliance	-	-	-	-	-	16.4	17.9	19.6	19.7	17.8	-	-	-	-
Furniture	-	-	-	-	-	16.7	18.4	20.3	20.3	18.1	-	-	-	-

Table 6.9: Mean expenditure and percentage of mean expenditure imputed, wave 1 – 14 (weighted)

	Wave													
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Rent payments (Collected in all waves in HQ)														
Mean	196	200	208	218	229	248	264	288	319	327	401	397	413	412
Per cent imputed	0.9	1.0	1.2	0.6	1.4	1.0	0.8	0.9	0.9	1.0	0.7	1.8	0.6	0.6
Mortgage repayments (Collected in all waves in HQ)														
Mean	276	283	317	345	389	460	507	588	558	606	611	625	614	663
Per cent imputed	7.2	6.2	6.1	5.8	5.0	2.6	3.3	4.5	5.7	3.7	4.7	4.9	5.1	4.6
Weekly household expenditure on grocery (Collected in wave 1,3,4,5 and 11 to 14 in HQ)														
Mean	132	-	137	143	149	-	-	-	-	-	188	188	191	195
Per cent imputed	1.4	-	1.0	0.8	1.2	-	-	-	-	-	1.9	1.5	1.0	0.9
Annualised household expenditure on grocery (Collected in the SCQ from wave 5)														
Mean	-	-	-	-	7,710	8,199	8,673	9,182	9,084	9,286	9,521	9,563	9,750	8,974
Per cent imputed	-	-	-	-	15.1	15.7	17.0	18.8	18.5	16.0	17.4	17.9	17.8	15.8
Annualised household expenditure on alcohol (Collected in the SCQ from wave 5)														
Mean	-	-	-	-	1,134	1,271	1,348	1,413	1,422	1,444	1,446	1,498	1,512	1,543
Per cent imputed	-	-	-	-	14.4	16.0	18.9	20.7	19.9	18.2	20.0	20.0	21.2	19.9
Annualised household expenditure on motor vehicle fuel (Collected in the SCQ from wave 5)														
Mean	-	-	-	-	1,853	2,311	2,212	2,700	2,211	2,234	2,379	2,318	2,250	2,469
Per cent imputed	-	-	-	-	15.7	14.7	17.0	19.4	18.0	16.0	17.3	16.9	15.9	20.0

7 THE HILDA SAMPLE

7.1 Sample Design

7.1.1 Overview

In line with leading panel studies conducted in other countries, the sampling unit is the household, and members of those households will be traced over an indefinite life. The wave 1 sample is then automatically extended over time by following rules that add to the sample:

- any children born to or adopted by members of the selected households;
- new household members resulting from changes in the composition of the original households;[29]
- a new household member that arrived in Australia for the first time after 2001 (or after 2011 if part of the top-up sample).

These following rules, in combination with the initial sample that is intended to be representative of all Australian households, provide a mechanism for ensuring that the panel retains its cross-sectional representativeness over time.

While all members of the selected households are defined as members of the sample, individual interviews are only conducted with those aged 15 years and over on the 30th June in the year of the survey. Some limited information about people under 15, however, is collected from an appropriate adult member of the household.[30]

7.1.2 Reference Population

The reference population for wave 1 was all members of private dwellings in Australia, with the following exceptions:

- certain diplomatic personnel of overseas governments, customarily excluded from censuses and surveys;
- overseas residents in Australia (that is, persons who had stayed or intended to stay in Australia less than one year);
- members of non-Australian defence forces (and their dependents) stationed in Australia;
- residents of institutions (such as hospitals and other health care institutions, military and police installations, correctional and penal institutions, convents and monasteries) and other non-private dwellings (such as hotels and motels); and

[29] See Section 7.2 on Following Rules for more information about who is temporarily and permanently added to the sample.

[30] This approach is consistent with the British Household Panel Study (BHPS), with the difference that in the BHPS only people aged 16 years and over are interviewed. The lower age chosen for the HILDA Survey simply reflects our desire to conform to Australian Bureau of Statistics (ABS) standards adopted in the Labour Force Survey.

- people living in remote and sparsely populated areas.

Further, to ensure that all members of the in-scope population have the same probability of selection, dwellings that were not primary places of residence (for example, holiday homes) were also excluded.

These coverage rules are broadly in line with those adopted by the Australian Bureau of Statistics (ABS) in the monthly Labour Force Survey supplements.[31] There are, however, two major differences. First, unlike the ABS, individuals at boarding schools, halls of residence and university colleges were included in the reference population for wave 1. Second, and again in contrast to ABS practice, military personnel who reside in private dwellings are part of the reference population for wave 1.

Note that while all members of the selected households are defined as members of the sample, individual interviews were only conducted with those aged 15 years and over.

7.1.3 Sampling Units

The sampling unit is the household defined, following the ABS, as 'a group of people who usually reside and eat together'[32]. The ABS clarifies how this definition is operationalised. Specifically, a household is either:

- a one-person household, that is, a person who makes provision for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; or
- a multi-person household, that is, a group of two or more persons, living within the same dwelling, who make common provision for food or other essentials for living. The persons in the group may pool their incomes and have a common budget to a greater or lesser extent; they may be related or unrelated persons, or a combination of both.

In general, persons who live in more than one household were only treated as members of the household where they spent most of their time. People who lived in another private dwelling for more than 50 per cent of the time were not treated as part of the household. Visitors to the household were also not treated as part of the household. Finally, people who usually lived in the household but were temporarily absent for work, school or other purposes were treated as part of the household, and this meant that a small proportion of interviews were conducted in locations other than at the household address.

Note again that we varied from the ABS practice in how we treat children attending boarding schools and halls of residence while studying. Specifically, while these

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[31] ABS, Labour Statistics: Concepts, Sources and Methods (ABS Cat. No. 6102.0), ABS, Canberra, 2001.

[32] ABS, Statistical Concepts Library (ABS Cat. No. 1361.30.001), ABS, Canberra, 2000.

dwellings are out of scope in wave 1, such individuals were treated as members of sampled households provided they spent at least part of the year in the sampled dwelling.

7.1.4 Sample Selection

The households were selected using a multi-staged approach. First, a sample of 488 Census Collection Districts (CDs) were selected from across Australia (each of which consists of approximately 200 to 250 households). Second, within each of these CDs, a sample of 22 to 34 dwellings was selected, depending on the expected response and occupancy rates of the area. The selections were made after all dwellings within each of the CDs were fully listed. Finally, within each dwelling, up to three households were selected to be part of the sample (Watson and Wooden (2002b) provides further details of the sampling methodology).

In order to retain cross-sectional representativeness in the sample an additional 2,153 households were added to the sample as part of a general top-up in wave 11. The top-up sample was selected using the same methodology as the original HILDA sample. See Watson (2011) for further information.

7.2 Following Rules

The fully and partially responding households in wave 1 form the basis of the indefinite life panel. Members of these households are followed over time and the sample is extended to include:

- any children born to or adopted by members of the selected households;
- new household members resulting from changes in the composition of the original households.
- a new household member that arrived in Australia for the first time after 2001 (or after 2011 if part of the top-up sample).

Continuing Sample Members (CSMs) include all members of wave 1 households (including children). Any children born to or adopted by CSMs are also classified as CSMs. Further, all new entrants to a household who have a child with a CSM and any recent immigrants to Australia (arriving after 2001 for the Main Sample, 2011 for the Top-Up Sample) are converted to CSM status.[33] CSMs remain in the sample indefinitely. All other people who share a household with a CSM in wave 2 or later are considered Temporary Sample Members (TSMs).

Where the household has moved, split or moved and split, the interviewers and office staff track the CSMs. The CSMs (along with their new household) are then

[33] The inclusion of recent immigrants to the following rules occurred in 2009.

interviewed, where applicable, at their new address or by phone.[34] TSMs that split from a household and are no longer part of a household with a CSM are not followed. However, if the TSM is converted to a CSM, then they are followed for interview as any CSM would be.

[34] Note that if a child CSM moves without any other adult CSMs, they are followed to their new household and the eligible members of that household are then interviewed.

8 DATA COLLECTION

From wave 9 the data collection task was subcontracted to Roy Morgan Research, an Australian owned market research company. This transition from Nielsen (the fieldwork provider for waves 1-8) also involved a change in the method of data collection to computer-assisted personal interviewing (CAPI) (for further information Watson, 2010).

8.1 Pilot Testing

The questionnaires are developed over the 9-month period prior to the main fieldwork for each wave. This pilot testing involves:

- Skirmish with a small number of participants (10-15 for waves 1-4 and 30 from wave 5-12) conducted in an office environment. As of wave 13 only minor changes to the questionnaires have been made, therefore a skirmish has not been held.
- Dress Rehearsal with a sample of households:
    - Waves 1-4 with approximately 200 in NSW;
    - Waves 5-12 with approximately 700 in NSW and Victoria;
    - Wave 13-14 with 300 in Melbourne and Geelong.

In waves 1 and 2, a Pre-Test was also conducted in between the Skirmish and Dress Rehearsal with 30 Sydney households. From wave 3 onwards, the Pre-Test sample has been rolled into the Dress Rehearsal sample and in wave 5 a booster sample of 500 households was added.

8.2 Dependent data

In wave 9, the introduction of the CAPI instrument also included the use of dependent data drawn from interviews at previous waves. As in previous waves, the HF displayed information from the previous wave including dates of birth, last interview date, last wave outcome and a list of sample members who had lived with the a respondent previously. Prior to wave 9 this information was pre-printed on the HF. In wave 9 this data was pre-loaded into the HF.

From wave 9, two extra pieces of information were brought forward from the previous interview;

(i) whether the respondent was employed or not in the previous wave interviewed; and

(ii) if they were employed whether they had one or more jobs.

This information was used in section C (current employment) and section D (not currently employed). This information was used as *proactive dependent data* which means that they are reminded of what they said at the previous interview and then

given the opportunity to correct the information presented to them if they disagree with it.

From wave 10, extra information fed forward included;

i) children's first name, age, and sex including new children added to the HF (in section G) (deceased children were also included in wave 11);

ii) marital status and cohabitation (in section H), and;

iii) property ownership and age first acquired property (in section J) (wave 10 and 14 only);

iv) whether both parents were dead (wave 12 only); used to skip questions in Section HP about respondents parents;

v) whether an update to Citizenship / Permanent residence is required (wave 14 only). The target population was all persons who indicated either at Wave 4 (in CPQ or NPQ) or in an NPQ in a subsequent wave that they were NOT an Australian citizen;

vi) whether an update to work experience (total years spent in paid work over a lifetime) is required (wave 14 only). The target population was all persons that did not respond to one or more waves subsequent to the wave first interviewed.

8.3 Questionnaire Length

Table 8.1 provides the average time taken to complete each of the questionnaires each wave. The increased length of the HQ in wave 2, 6, 10 and 14 is due to the inclusion of the wealth module.

Table 8.1: Average time (minutes) taken to complete questionnaires, waves 1 - 14

	Wave													
Questionnaire	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Household Form (responding households) [1]	4	5	5	5	6	6	6	6	6	6	6	6	6	6
Household Questionnaire	6.2	10.0	6.6	6.5	6.2	10.7	5.1	4.7	6	10	5.2	6.9	7.1	17.3[3]
Person Questionnaire	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Continuing Person Questionnaire	-	30.5	30.1	28.1	31.7	31.3	34.8	35.8	34.7	29.9	33.0	40.0	34.8	28.8
New Person Questionnaire	-	36.2	34.2	37.7	37.5	37.1	37.6	40.3	43.6	39.9	40.0 36.9[2]	48	44.6	37.7
Self-Completion Questionnaire [1]	20	20	20	20	30	30	30	30	30	30	30	30	30	30

[1] Approximate minutes as not timed.

[2] Top-up Sample NPQs.

[3] HQ includes Wealth module and new Material Deprivation module (avg. 6 mins).

8.4 Interviewers

The number of face-to-face and phone interviewers used for each wave of the fieldwork is given in Table 8.2, together with the percentage of interviewers that were new to the HILDA Survey.

From wave 1 to 9, all interviewers and supervisors attended a two-day briefing session prior to each wave. From wave 2 to 9, the new interviewers received an extra day of training. From wave 10, all new interviewers attended a 3 day training session and experienced interviewers receive a one day training session. All interviewers are provided with a manual covering the details of the questionnaires and fieldwork procedures.

Table 8.2: Number of interviewers and percentage of new interviewers each wave

	Face-to-face interviewers		*Telephone interviewers*		*All interviewers*	
	Number	*% new*	*Number*	*% new*	*Number*	*% new*
Wave 1	133	100.0	0	–	133	100.0
Wave 2	132	33.3	10	100.0	142	38.0
Wave 3	117	18.8	11	54.5	128	21.9
Wave 4	117	12.8	9	44.4	126	15.1
Wave 5	122	14.8	10	80.0	132	19.7
Wave 6	127	28.3	13	53.8	140	30.7
Wave 7	127	21.3	14	50.0	141	24.1
Wave 8	123	11.4	15	46.7	138	15.2
Wave 9	135	34.1	24	95.8	159	43.4
Wave 10	132	11.4	23	69.6	155	20.0
Wave 11	135	15.6	32	56.3	167	23.4
Wave 12	144	21.5	33	49.0	177	26.6
Wave 13	159	19.5	36	61.1	195	27.2
Wave 14	160	13.7	36	38.9	196	18.4

8.5 Fieldwork Process

8.5.1 Data Collection Mode

The vast majority of the data were collected though face-to-face interviews. While telephone interviews and assisted interviews were conducted to ensure a high

response rate, they are only used as a last resort. Table 8.3 provides the percentage of people interviewed by telephone in each wave. Due to the fact that some households moved outside of the 488 areas originally selected across Australia in wave 1 and the desire to interview as many people as possible, more telephone interviews are necessary in later waves.

Table 8.3: Percentage of respondents interviewed by telephone

	Main Sample														*Top-Up Sample*			
	Wave																	
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*11*	*12*	*13*	*14*
Previous respondents	-	2.7	4.1	5.0	5.4	6.0	7.7	9.2	8.0	8.1	8.1	8.5	8.2	8.4	-	4.3	4.9	4.5
Previous non-respondents	-	7.7	11.6	18.0	20.9	27.9	28.4	35.6	31.9	27.4	32.9	33.0	39.2	34.2	-	18.2	26.7	27.2
Previous child, now turned 15	-	3.2	5.2	4.9	5.4	5.9	8.5	13.7	8.1	5.4	8.8	5.2	6.3	7.8	-	3.1	2.9	7.5
New entrants (TSM)	-	7.5	8.7	8.3	13.7	10.3	14.6	12.6	12.8	11.7	8.4	9.1	11.0	12.1	-	6.2	6.5	5.4
All wave respondents	0.5	3.0	4.6	5.6	6.5	6.9	8.4	10.1	9.1	8.7	8.6	8.9	8.9	9.0	1.8	4.5	5.3	5.3

8.5.2 Timeline

The interviews are conducted annually with the interviewer briefing occurring at the end of July- mid August each year. In wave 1, all but a few interviews were completed by December 2001. From wave 2 onwards, the fieldwork has been extended by several months into the following year to focus on tracking and interviewing hard-to-find cases.

Table 8.4 provides details of the fieldwork dates and Table 8.5 shows how the individual interviews are spread across each fieldwork period. The fieldwork period for wave 11 was extended due to the addition of the Top-Up sample.

For those interviewed in the next wave, most are interviewed within one month of the anniversary of the previous interview (as shown in Table 8.6). Approximately 4 per cent of the interviews are, however, conducted three or more months before or after the anniversary of the interview in the previous wave.

Table 8.4: Fieldwork dates and percentage of interviews post December

	Fieldwork period		*Percentage of fieldwork post December*	
Wave	*Beginning of fieldwork*	*End of fieldwork*	*Main Sample*	*Top-Up Sample*
1	24 August 2001	23 January 2002	0.4	
2	21 August 2002	19 March 2003	2.3	
3	20 August 2003	9 March 2004	1.8	
4	19 August 2004	7 April 2005	2.3	
5	24 August 2005	14 March 2006	4.0	
6	23 August 2006	25 March 2007	2.2	
7	22 August 2007	18 February 2008	2.6	
8	20 August 2008	27 February 2009	3.0	
9	20 August 2009	11 March 2010	4.2	
10	17 August 2010	13 February 2011	3.7	
11	27 July 2011	19 February 2012	3.4	8.5
12	31 July 2012	10 February 2013	2.9	4.0
13	30 July 2013	9 February 2014	2.3	2.7
14	29 July 2014	8 February 2015	2.1	2.0

Table 8.5: Distribution of individual interviews conducted by month, waves 1 - 14

	July	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Total*
Main Sample										
Wave 1	-	1.1	40.2	36.9	14.0	7.4	0.4	-	-	100.0
Wave 2	-	5.7	55.8	24.8	10.6	0.9	0.0	2.1	0.2	100.0
Wave 3	-	7.7	57.9	22.9	8.3	1.2	0.2	1.6	0.0	100.0
Wave 4	-	12.4	60.1	18.0	6.1	1.1	0.2	2.1	-	100.0
Wave 5	-	3.2	53.3	30.5	7.4	1.6	1.5	2.4	0.0	100.0
Wave 6	-	4.1	57.3	28.0	7.0	1.4	1.1	1.1	0.0	100.0
Wave 7	-	4.4	55.7	29.3	7.2	0.8	1.3	1.3	-	100.0
Wave 8	-	7.7	57.6	23.1	7.7	1.0	1.4	1.6	-	100.0
Wave 9	-	4.9	54.1	29.1	6.1	1.7	2.1	2.0	0.0	100.0
Wave 10	-	12.7	50.8	24.6	6.7	1.5	2.3	1.4	0.0	100.0
Wave 11	0.4	36.9	40.2	12.3	5.9	1.0	2.0	1.5	0.0	100.0
Wave 12	0.2	42.5	38.1	10.1	5.0	1.2	2.1	0.9	-	100.0
Wave 13	0.2	40.3	40.2	11.3	4.6	1.1	1.7	0.6	-	100.0
Wave 14	0.6	44.9	40.5	7.4	3.9	0.7	1.7	0.5	-	100.0
Top-Up Sample										
Wave 11	4.8	47.9	16.8	6.4	13.7	2.0	5.1	3.4	-	100.0
Wave 12	0.0	36.8	41.2	10.6	6.2	1.2	2.5	1.5	-	100.0
Wave 13	0.3	40.6	38.4	10.8	6.2	1.0	2.0	0.7	-	100.0
Wave 14	0.6	41.6	42.2	6.6	5.9	1.1	1.4	0.6	-	100.0

Table 8.6: Distribution of individual interviews conducted around the anniversary of the prior wave's interview, waves 2 - 14

	-91 or more days	*-61 to -90 days*	*-31 to -60 days*	*± 30 days*	*+31 to 60 days*	*+61 to 90 days*	*+91 days or more*	*Total*
Main Sample								
Wave 2	1.4	8.2	15.1	66.6	5.0	2.1	1.7	100.0
Wave 3	2.0	3.3	6.2	78.8	6.7	1.9	1.2	100.0
Wave 4	1.6	2.6	7.3	80.1	4.8	1.9	1.8	100.0
Wave 5	1.8	2.3	3.9	77.1	9.5	3.1	2.3	100.0
Wave 6	2.7	2.8	7.2	78.4	5.6	2.1	1.2	100.0
Wave 7	1.5	2.1	6.0	81.1	5.5	2.1	1.7	100.0
Wave 8	1.7	2.3	6.1	80.6	5.0	2.4	1.8	100.0
Wave 9	1.9	2.6	6.0	79.0	6.1	2.3	2.1	100.0
Wave 10	2.5	2.8	7.3	78.4	5.5	1.6	2.0	100.0
Wave 11	3.0	3.9	16.9	68.0	4.7	1.7	1.9	100.0
Wave 12	2.8	3.5	11.0	68.9	9.0	2.3	2.5	100.0
Wave 13	2.6	2.7	5.7	77.9	7.0	2.4	1.7	100.0
Wave 14	2.1	2.8	9.2	77.1	5.8	1.7	1.4	100.0
Top-Up Sample								
Wave 12	8.7	7.3	8.3	50.4	16.6	4.7	4.0	100.0
Wave 13	3.4	3.2	7.5	74.1	6.7	2.8	2.3	100.0
Wave 14	2.0	3.0	8.7	76.0	6.1	2.7	1.5	100.0

8.5.3 Survey Notification Material

In wave 1, the selected households were sent a primary approach letter and a brochure approximately one week prior to when the interviewer was scheduled to make contact with the household. This pre-interview material marketed the survey to respondents as a study about 'Living in Australia' and, among other things, emphasised that participation was voluntary and provided a means for sample members to opt out of the survey prior to an interviewer calling.

From wave 2 onwards, a primary approach letter and newsletter were sent to the last known address of the households approximately one month prior to when the interviewer was scheduled to make contact with the household. The newsletter provides respondents with some results from prior waves. In addition to the posted

pre-interview material, households with people who had not been part of the household in the previous wave were given a New Entrants Brochure. This brochure provided more information about the purpose of the study, why they had been asked to participate, and a method to opt out of the study if they chose to. A follow-up newsletter was introduced from wave 3 onwards.

A copy of the primary approach letters, brochures and newsletters are available from the HILDA website: http://www.melbourneinstitute.com/hilda/doc/doc_respinfo.html

8.5.4 Respondent Incentives

In waves 1 to 4, a $50 cash incentive was offered to households where all eligible household members completed the Person Questionnaire. If this did not occur, a $20 payment was offered to households if at least one interview was obtained.

In waves 5 to 8, respondents providing an individual interview received $25 and a $25 bonus was received by each fully responding household (i.e., each eligible member if the household provided an interview). This cash incentive structure is different to the one used in waves 1 to 4.

In wave 9, two significant changes were made to the cash incentive. First, it was provided to the respondent in cash immediately after the face-to-face interview. Second, the incentive was increased from $25 to $30.

In wave 13 the cash incentive for the completion of an individual interview and the household bonus was increased to $35.

The availability of the incentive was made clear in both primary approach letter and the brochure/newsletter.

8.5.5 Call Routine, Follow-Up and Refusal Aversion

In wave 1, the fieldwork was conducted in two stages. The first stage involved the interviewer working in an area over a three-week period. They visited each selected household according to the specified call-back pattern.[35] This achieved approximately 65 per cent of the interviews from each area. The remainder of each workload was then consolidated into intensive follow-up workloads and reassigned to the most experienced interviewers. They again visited each of these households according to the specified call-back pattern. These interviewers obtained the remaining 35 per cent of the interviews from each area.

From wave 2 onwards, a tracking component is incorporated into the fieldwork, splitting it into three distinct periods.[36] All households were issued into the field for the first period, and where all the interviews had not been completed, they were

[35]Six or more calls were made to all selected households until a final household outcome was achieved. These calls were made over a minimum of a five-day period, with typically three calls on weekdays and at least three calls on weekends.

[36]For details on the tracking procedures adopted, see Watson and Wooden (2004b).

reissued into the field in the next period.[37] If a household could not be found at either one of these stages, they were put into tracking and once found were issued back into the current period if found quickly or more generally into a later period. The third period was used to finalise households that had to be traced and could not be immediately issued back into the field and also to contact some households where it was deemed beneficial to contact them in the third time (for example, a household member may have been away from the household at earlier contacts or they may have been temporarily unwell or busy).

8.5.6 Foreign Language Interviews

Language difficulties between the interviewer and the potential respondent were most often resolved by another member of the household acting as an interpreter. However, a small number of interviews each wave are conducted with a professional interpreter present during the interview (see variable *_iohlp* (Assistance of 3rd party)).

The Self Complete Questionnaire is only provided in English.

8.5.7 Interviewer Monitoring

Several methods were used to ensure the fieldwork quality was consistent and maintained throughout the fieldwork collection period. These methods focused on the training, experience, in-field checking and monitoring of the interviewers.[38]

8.6 Response Rates

A summary of the outcomes of the wave 1 fieldwork is provided in Table 8.7 and reveals that from the 11,693 households identified as in-scope, interviews were completed with all eligible members of 6872 households and with at least one eligible member of a further 810 households. The household response rate was, therefore, 66 per cent. Wooden, Freidin and Watson (2002) provide some comparisons of this response rate to other similar studies and conclude there are good reasons to be extremely satisfied with the rate of response obtained.

[37]When initially making contact with a household, the interviewer had up to six calls to make contact and a further six calls to undertake all of the interviews once contact had been made. If a household had to be put into tracking and was found, the initial call allocation to make contact with the household was carried over to the next period of the fieldwork. When following up a household, the interviewer had a total of five calls to finalise the household.

[38]See Watson and Wooden (2002b) for details of these monitoring methods.

Table 8.7: Wave 1 household outcomes

Sample outcome	*Number*	*Per cent*
Addresses issued	12,252	
Less out-of-scope (vacant, non-residential, foreign)	804	
Plus multi-households additional to sample	245	
Total households	11,693	100.0
Refusals to interviewer	2,670	22.8
Refusals to fieldwork company (via 1800 number or email)	431	3.7
Non-response with contact	469	4.0
Non-contact	441	3.8
Fully responding households	6,872	58.8
Partially responding households	810	6.9

The wave 1 person-level outcomes are provided in Table 8.8. Within the 7,682 households interviewed, there were 19,914 people, resulting in an average of 2.6 persons per household. Of these people 4,787 were under 15 years of age on the preceding 30 June and hence were ineligible for an interview in wave 1. This provided a sample of 15,127 eligible persons, 13,969 of whom completed the Person Questionnaire.

Table 8.8: Wave 1 person outcomes

Sample outcome	*Number*	*Per cent*
Enumerated persons	19,914	
Ineligible children (under 15)	4,787	
Eligible adults	15,127	100.0
Refusals to interviewer	597	3.9
Refusals to fieldwork company (via 1800 number or email)	31	0.2
Non-response with contact	218	1.4
Non-contact	312	2.1
Responding individuals	13,969	92.3

Table 8.9 through to Table 8.19 and Table 8.21 to Table 8.26, shows the household outcomes for waves 2 through 14. The household response rate (including fully and

partially responding households) ranges from 87.0 per cent in wave 2 to 68.6 per cent in wave 14. In these calculations, the households not issued to field are included together with those issued to field.

It is also constructive to consider the household outcomes for two groups – those that responded in the previous wave and those that didn't.[39] The household response rates for those households responding in the previous wave ranges from 87.0 per cent in wave 2 to 95.8 per cent in wave 14.

Table 8.9: Wave 2 household outcomes

Sample Outcome	*Number*	*Per cent*
Households issued	7,682	
Plus split households	709	
Less dead or empty households (out of scope)	23	
Less households overseas (out of scope)	42	
Total households	8,326	100
Refusals to interviewer	490	5.9
Refusals to fieldwork company (via 1800 number or email)	132	1.6
Non-response with contact	134	1.6
Non-contact, not lost to tracking	75	0.9
Lost to tracking	250	3
Fully responding households	6,542	78.6
Partially responding households	703	8.4

[39]Only responding households in wave 1 were issued in wave 2, so the closest comparison in the household response rate to be made in later waves is for households responding in the previous wave.

Table 8.10: Wave 3 household outcomes

Sample Outcome	*All households*		*Wave 2 responding HH*		*Wave 2 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 2	8,368		7,245		1,123	
Plus split households	466		413		53	
Less dead or empty households	72		58		14	
Less households overseas	85		36		49	
Total households	8,677	100.0	7,564	100.0	1,113	100.0
Not issued to field [1]	399	4.6	12	0.2	387	34.8
Refusals to interviewer	688	7.9	383	5.1	305	27.4
Refusals to fieldwork company (via 1800 number or email)	145	1.7	80	1.1	65	5.8
Non-response with contact	146	1.7	103	1.4	43	3.9
Non-contact, not lost to tracking	57	0.7	43	0.6	14	1.3
Lost to tracking	146	1.7	91	1.2	55	4.9
Fully responding households	6,464	74.5	6,291	83.2	173	15.5
Partially responding households	632	7.3	561	7.4	71	6.4

[1] Includes 220 untraceable households from wave 2.

Table 8.11: Wave 4 household outcomes

Sample Outcome	*All households*		*Wave 3 responding HH*		*Wave 3 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 3	8,762		7,096		1,666	
Plus split households	371		337		34	
Less dead or empty households	104		70		34	
Less households overseas	150		57		93	
Total households	8,879	100.0	7,306	100.0	1,573	100.0
Not issued to field [1]	804	9.1	0	0.0	804	51.1
Refusals to interviewer	614	6.9	312	4.3	302	19.2
Refusals to fieldwork company (via 1800 number or email)	87	1.0	52	0.7	35	2.2
Non-response with contact	179	2.0	116	1.6	63	4.0
Non-contact, not lost to tracking	90	1.0	43	0.6	47	3.0
Lost to tracking	118	1.3	37	0.5	81	5.1
Fully responding households	6,304	71.0	6,124	83.8	180	11.4
Partially responding households	683	7.7	622	8.5	61	3.9

[1] Includes 277 untraceable households from waves 2 and 3.

Table 8.12: Wave 5 household outcomes

Sample Outcome	*All households*		*Wave 4 responding HH*		*Wave 4 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 4	9,029		6,987		2,042	
Plus split households	388		325		63	
Less dead or empty households	132		93		39	
Less households overseas	169		39		130	
Total households	9,116	100.0	7,180	100.0	1,936	100.0
Not issued to field [1]	1,066	11.7	0	0.0	1,066	55.1
Refusals to interviewer	604	6.6	224	3.1	380	19.6
Refusals to fieldwork company (via 1800 number or email)	40	0.4	12	0.2	28	1.4
Non-response with contact	125	1.4	84	1.2	41	2.1
Non-contact, not lost to tracking	77	0.8	40	0.6	37	1.9
Lost to tracking	79	0.9	31	0.4	48	2.5
Fully responding households	6,495	71.2	6,251	87.1	244	12.6
Partially responding households	630	6.9	538	7.5	92	4.8

[1] Includes 355 untraceable households from waves 2 to 4.

Table 8.13: Wave 6 household outcomes

Sample Outcome	*All households*		*Wave 5 responding HH*		*Wave 5 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 5	9,285		7,125		2,160	
Plus split households	394		376		18	
Less dead or empty households	120		82		38	
Less households overseas	241		79		162	
Total households	9,318	100.0	7,340	100.0	1,978	100.0
Not issued to field [1]	1,419	15.2	0	0.0	1,419	71.7
Refusals to interviewer	495	5.3	240	3.3	255	12.9
Refusals to fieldwork company (via 1800 number or email)	36	0.4	11	0.1	25	1.3
Non-response with contact	110	1.2	82	1.1	28	1.4
Non-contact, not lost to tracking	46	0.5	29	0.4	17	0.9
Lost to tracking	73	0.8	25	0.3	48	2.4
Fully responding households	6,541	70.2	6,399	87.2	142	7.2
Partially responding households	598	6.4	554	7.5	44	2.2

[1] Includes 395 untraceable households from waves 2 to 5.

Table 8.14: Wave 7 household outcomes

Sample Outcome	*All households*		*Wave 6 responding HH*		*Wave 6 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 6	9,559		7,139		2,420	
Plus split households	322		315		7	
Less dead or empty households	129		92		37	
Less households overseas	288		69		219	
Total households	9,464	100.0	7,293	100.0	2,171	100.0
Not issued to field [1]	1,750	18.5	1	0.0	1,749	80.6
Refusals to interviewer	429	4.5	248	3.4	181	8.3
Refusals to fieldwork company (via 1800 number or email)	38	0.4	19	0.3	19	0.9
Non-response with contact	81	0.9	57	0.8	24	1.1
Non-contact, not lost to tracking	55	0.6	30	0.4	25	1.2
Lost to tracking	48	0.5	21	0.3	27	1.2
Fully responding households	6,438	68.0	6,329	86.8	109	5.0
Partially responding households	625	6.6	588	8.1	37	1.7

[1] Includes 419 untraceable households from waves 2 to 6.

Table 8.15: Wave 8 household outcomes

Sample Outcome	*All households*		*Wave 7 responding HH*		*Wave 7 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 7	9,752		7,063		2,689	
Plus split households	350		329		21	
Less dead or empty households	169		105		64	
Less households overseas	304		45		259	
Total households	9,629	100.0	7,242	100.0	2,387	100.0
Not issued to field [1]	1,909	19.8	0	0.0	1,909	80.0
Refusals to interviewer	407	4.2	213	2.9	194	8.1
Refusals to fieldwork company (via 1800 number or email)	52	0.5	32	0.4	20	0.8
Non-response with contact	99	1.0	62	0.9	37	1.6
Non-contact, not lost to tracking	36	0.4	17	0.2	19	0.8
Lost to tracking	60	0.6	26	0.4	34	1.4
Fully responding households	6,451	67.0	6,319	87.3	132	5.5
Partially responding households	615	6.4	573	7.9	42	1.8

[1] Includes 429 untraceable households from waves 2 to 7.

Table 8.16: Wave 9 household outcomes

Sample Outcome	*All households*		*Wave 8 responding HH*		*Wave 8 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 8	9,933		7,066		2,867	
Plus split households	405		382		23	
Less dead or empty households	133		92		41	
Less households overseas	316		68		248	
Total households	9,889	100.0	7,288	100.0	2,601	100.0
Not issued to field [1]	1,987	20.1	1	0.0	1,986	76.4
Refusals to interviewer	449	4.5	201	2.8	248	9.5
Refusals to fieldwork company (via 1800 number or email)	26	0.3	16	0.2	10	0.4
Non-response with contact	69	0.7	41	0.6	28	1.1
Non-contact, not lost to tracking	21	0.2	11	0.2	10	0.4
Lost to tracking	103	1.0	26	0.4	77	3.0
Fully responding households	6,667	67.4	6,469	88.8	198	7.6
Partially responding households	567	5.7	523	7.2	44	1.7

[1] Includes 426 untraceable households from waves 2 to 8.

Table 8.17: Wave 10 household outcomes

Sample Outcome	*All households*		*Wave 9 responding HH*		*Wave 9 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 9	10,205		7,234		2,971	
Plus split households	380		378		2	
Less dead or empty households	159		107		52	
Less households overseas	321		55		266	
Total households	10,105	100.0	7,450	100.0	2,655	100.0
Not issued to field [1]	2,116	20.9	0	0.0	2,116	79.7
Refusals to interviewer	501	5.0	213	2.9	288	10.8
Refusals to fieldwork company (via 1800 number or email)	28	0.3	13	0.2	15	0.6
Non-response with contact	41	0.4	31	0.4	10	0.4
Non-contact, not lost to tracking	26	0.3	12	0.2	14	0.5
Lost to tracking	76	0.8	20	0.3	56	2.1
Fully responding households	6,727	66.6	6,609	88.7	118	4.4
Partially responding households	590	5.8	552	7.4	38	1.4

[1] Includes 430 untraceable households from waves 2 to 9.

Table 8.18: Wave 11 household outcomes, Main Sample

Sample Outcome	*All households*		*Wave 10 responding HH*		*Wave 10 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 10	10,426		7,317		3,109	
Plus split households	368		359		9	
Less dead or empty households	145		89		56	
Less households overseas	333		50		283	
Total households	10,316	100.0	7,537	100.0	2,779	100.0
Not issued to field [1]	2,222	21.5	3	0.0	2,219	79.8
Refusals to interviewer	573	5.6	209	2.8	364	13.1
Refusals to fieldwork company (via 1800 number or email)	2	0.0	0	0.0	2	0.1
Non-response with contact	24	0.2	16	0.2	8	0.3
Non-contact, not lost to tracking	35	0.3	17	0.2	18	0.6
Lost to tracking	70	0.7	26	0.3	44	1.6
Fully responding households	6,776	65.7	6,689	88.7	87	3.1
Partially responding households	614	6.0	577	7.7	37	1.3

[1] Includes 443 untraceable households from wave 2 to wave 11.

Table 8.19: Wave 11 household outcomes, Top-Up sample

Sample outcome	*Number*	*Per cent*
Addresses issued	3,250	
Less out-of-scope (vacant, non-residential, foreign)	212	
Plus multi-households additional to sample	79	
Total households	3,117	100.0
Refusals to interviewer	885	28.4
Refusals to fieldwork company (via 1800 number or email)	16	0.5
Non-response with contact	16	0.5
Non-contact	47	1.5
Fully responding households	1,963	63.0
Partially responding households	190	6.1

Table 8.20: Wave 11 person outcomes, Top-Up sample

Sample outcome	*Number*	*Per cent*
Enumerated persons	5,451	
Ineligible children (under 15)	1171	
Eligible adults	4,280	100.0
Refusals to interviewer	228	5.3
Refusals to fieldwork company (via 1800 number or email)	0	0.0
Non-response with contact	23	0.5
Non-contact	20	0.5
Responding individuals	4,009	93.7

Table 8.21: Wave 12 household outcomes, Main Sample

Sample Outcome	*All households*		*Wave 11 responding HH*		*Wave 11 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 11	10,649		7,390		3,259	
Plus split households	358		348		10	
Less dead or empty households	168		114		54	
Less households overseas	342		49		293	
Total households	10,497	100.0	7,575	100.0	2,922	100.0
Not issued to field [1]	2,264	21.6	4	0.1	2,260	77.3
Refusals to interviewer	641	6.1	234	3.1	407	13.9
Refusals to fieldwork company (via 1800 number or email)	5	0.0	2	0.0	3	0.1
Non-response with contact	39	0.4	27	0.4	12	0.4
Non-contact, not lost to tracking	43	0.4	11	0.1	32	1.1
Lost to tracking	85	0.8	24	0.3	61	2.1
Fully responding households	6,806	64.8	6,694	88.4	112	3.8
Partially responding households	614	5.8	579	7.6	35	1.2

[1] Includes 453 untraceable households from wave 2 to wave 11.

Table 8.22: Wave 12 household outcomes, Top-Up sample

Sample outcome	*Number*	*Per cent*
Households from wave 11	2,153	
Plus split households	178	
Less dead or empty households	5	
Less households overseas	18	
Total households	2,308	100.0
Not issued to field	1	0.0
Refusals to interviewer	148	6.4
Refusals to fieldwork company (via 1800 number or email)	1	0.0
Non-response with contact	11	0.5
Non-contact, not lost to tracking	1	0.0
Lost to tracking	29	1.3
Fully responding households	1,954	84.7
Partially responding households	163	7.1

Table 8.23: Wave 13 household outcomes, Main Sample

Sample Outcome	*All households*		*Wave 12 responding HH*		*Wave 12 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 12	10,839		7,420		3,419	
Plus split households	373		348		25	
Less dead or empty households	165		114		51	
Less households overseas	369		52		317	
Total households	10,678	100.0	7,602	100.0	3,076	100.0
Not issued to field [1]	2,376	22.3	6	0.1	2,370	81.1
Refusals to interviewer	681	6.4	238	3.1	443	15.2
Refusals to fieldwork company (via 1800 number or email)	11	0.1	8	0.1	3	0.1
Non-response with contact	30	0.3	21	0.3	9	0.3
Non-contact, not lost to tracking	40	0.4	19	0.2	21	0.7
Lost to tracking	77	0.7	11	0.1	66	2.3
Fully responding households	6,808	63.8	6,693	88.0	115	3.9
Partially responding households	655	6.1	606	8.0	49	1.7

[1] Includes 469 untraceable households from wave 2 to wave 12.

Table 8.24: Wave 13 household outcomes, Top-Up sample

Sample Outcome	*All households*		*Wave 12 responding HH*		*Wave 12 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 12	2,326		2,117		209	
Plus split households	162		156		6	
Less dead or empty households	27		22		5	
Less households overseas	42		23		19	
Total households	2,419	100.0	2,228	100.0	191	100.0
Not issued to field [1]	22	0.9	2	0.1	20	10.5
Refusals to interviewer	238	9.8	134	6.0	104	54.5
Refusals to fieldwork company (via 1800 number or email)	2	0.1	0	0.0	2	1.0
Non-response with contact	16	0.7	11	0.5	5	2.6
Non-contact, not lost to tracking	5	0.2	5	0.2	0	0.0
Lost to tracking	44	1.8	23	1.0	21	11.0
Fully responding households	1,924	79.5	1,894	85.0	30	15.7
Partially responding households	168	6.9	159	7.1	9	4.7

[1] Includes 6 untraceable households from wave 11 to wave 12.

Table 8.25: Wave 14 household outcomes, Main Sample

Sample Outcome	*All households*		*Wave 13 responding HH*		*Wave 13 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 13	11,017		7,463		3,554	
Plus split households	382		347		36	
Less dead or empty households	137		109		29	
Less households overseas	418		65		353	
Total households	10,844	100.0	7,636	100.0	3,208	100.0
Not issued to field [1]	2,622	24.2	0	0.0	2,622	81.7
Refusals to interviewer	655	6.0	261	3.4	394	12.3
Refusals to fieldwork company (via 1800 number or email)	3	0.0	1	0.0	2	0.1
Non-response with contact	29	0.3	24	0.3	5	0.2
Non-contact, not lost to tracking	61	0.6	31	0.4	30	0.9
Lost to tracking	33	0.3	7	0.1	26	0.8
Fully responding households	6,863	63.3	6,758	88.5	105	3.3
Partially responding households	578	5.3	554	7.3	24	0.7

[1] Includes 494 untraceable households from wave 2 to wave 13.

Table 8.26: Wave 14 household outcomes, Top-Up sample

Sample Outcome	*All households*		*Wave 13 responding HH*		*Wave 13 non-responding HH*	
	Number	*%*	*Number*	*%*	*Number*	*%*
Households from wave 13	2,461		2,092		369	
Plus split households	135		126		9	
Less dead or empty households	26		24		2	
Less households overseas	69		29		40	
Total households	2,501	100.0	2,165	100.0	336	100.0
Not issued to field [1]	72	2.9	0	0.0	72	21.4
Refusals to interviewer	268	10.7	114	5.3	154	45.8
Refusals to fieldwork company (via 1800 number or email)	1	0.0	1	0.0	0	0.0
Non-response with contact	10	0.4	7	0.3	3	0.9
Non-contact, not lost to tracking	21	0.8	11	0.5	10	3.0
Lost to tracking	32	1.3	3	0.1	29	8.6
Fully responding households	1,949	77.9	1,900	87.8	49	14.6
Partially responding households	148	5.9	129	6.0	19	5.7

[1] Includes 9 untraceable households from wave 11 to wave 13.

In Table 8.27 to Table 8.29 we report a summary of the person-level response in waves 2 to 14. Of the 13,969 people interviewed in wave 1(Main Sample), the following numbers were re-interviewed each wave:

- 11,993 in wave 2;
- 11,190 in wave 3;
- 10,565 in wave 4;
- 10,392 in wave 5;
- 10,085 in wave 6;
- 9,628 in wave 7;
- 9,354 in wave 8;
- 9,245 in wave 9;
- 9,002 in wave 10;
- 8,780 in wave 11;
- 8,542 in wave 12;
- 8,301 in wave 13; and
- 8,112 in wave 14.

The number interviewed in all fourteen waves is 6,574.

Of the 4009 people interviewed in wave 11 Top-Up Sample, the following numbers were re-interviewed each wave:

- 3,652 in wave 12;
- 3,419 in wave 13; and
- 3,274 in wave 14.

The number interviewed in the Top-Up Sample in all waves is 3,140.

A common measure of the re-interviewing success is the attrition rate, calculated as the percentage of respondents in the previous wave that did not provide an interview in the current wave, excluding those that are out of scope (that is, those that have died or moved overseas). The wave-on-wave attrition rates for the Main Sample, as derived from Table 8.29, are:

- wave 2 – 13.2 per cent;
- wave 3 – 9.6 per cent;
- wave 4 – 8.4 per cent;
- wave 5 – 5.6 per cent;
- wave 6 – 5.1 per cent;
- wave 7 – 5.3 per cent;
- wave 8 – 4.8 per cent;
- wave 9 – 3.7 per cent;
- wave 10 – 3.7 per cent;
- wave 11 – 3.5 per cent;
- wave 12 – 3.8 per cent;
- wave 13 – 3.6 per cent and
- wave 14 – 3.5 per cent.

The wave-on-wave attrition rates for the Top-Up Sample, as derived from Table 8.29, are:

- wave 12 – 7.7 per cent;
- wave 13 – 7.3 per cent; and
- wave 14 – 5.5 per cent.

The attrition rates recorded in the early waves of the HILDA Survey are slightly higher than surveys such as the British Household Panel Study (BHPS), which achieved attrition rates in waves 2 and 3 of 12.4 per cent and 7.8 per cent respectively (after excluding proxy interviews). We believe they compare favorably

given the comparative waves of the BHPS were conducted 10 years earlier and it has been generally accepted that response rates to surveys have been falling.

Indeed, the wave 2 and 3 attrition rates for the BHPS Welsh sub-sample were 15.0 per cent and 9.6 per cent respectively and those for the BHPS Scottish sub-sample were 12.2 per cent and 8.1 per cent respectively (and these figures include proxy interviews which are not permitted in the HILDA Survey). The attrition rate in the HILDA Survey is noticeably higher than the BHPS in both waves 4, 6 and 7, but did drop below the BHPS attrition rate in waves 5 and 9 to 14. Indeed the gap in wave 14 is 1.0 percentage point.

Table 8.27: Wave 2 to 14 person outcomes against wave 1 person outcomes, Main Sample

		Wave 1			*New Entrants*		
		Resp.	*Non-resp.*	*Child*	*Earlier waves*	*Latest wave*	*Total*
Wave 2	Respondent	11,993	222	250	-	576	13,041
	Non-respondent	1,810	901	61	-	210	2,982
	Out-of-scope	166	35	19	-	-	220
	Child	-	-	4,457	-	345	4,802
Wave 3	Respondent	11,190	223	462	356	497	12,728
	Non-respondent	2,446	881	164	154	156	3,801
	Out-of-scope	333	54	37	334	-	758
	Child	-	-	4,124	287	364	4,775
Wave 4	Respondent	10,565	209	666	571	397	12,408
	Non-respondent	2,871	876	288	249	167	4,451
	Out-of-scope	533	73	64	770	-	1,440
	Child	-	-	3,769	558	332	4,659
Wave 5	Respondent	10,392	238	909	738	482	12,759
	Non-respondent	2,910	840	348	254	107	4,459
	Out-of-scope	667	80	69	1,217	-	2,033
	Child	-	-	3,461	835	355	4,651
Wave 6	Respondent	10,085	245	1,146	935	494	12,905
	Non-respondent	3,079	823	474	308	113	4,797
	Out-of-scope	805	90	69	1,659	-	2,623
	Child	-	-	3,098	1,086	342	4,526
Wave 7	Respondent	9,628	242	1,348	1,168	403	12,789
	Non-respondent	3,388	824	587	383	104	5,286
	Out-of-scope	953	92	79	2,034	-	3,158

		Wave 1			*New Entrants*		
		Resp.	*Non-resp.*	*Child*	*Earlier waves*	*Latest wave*	*Total*
	Child	-	-	2,773	1,352	343	4,468
Wave 8	Respondent	9,354	236	1,523	1,284	388	12,785
	Non-respondent	3,541	824	726	430	100	5,621
	Out-of-scope	1,074	98	92	2,476	-	3,740
	Child	-	-	2,446	1,597	333	4,376
Wave 9	Respondent	9,245	259	1,787	1,493	517	13,301
	Non-respondent	3,576	792	779	444	119	5,710
	Out-of-scope	1,148	107	90	2,802	-	4,147
	Child	-	-	2,131	1,869	361	4,361
Wave 10	Respondent	9,002	255	1,970	1,768	531	13,526
	Non-respondent	3,712	794	888	483	110	5,987
	Out-of-scope	1,255	109	106	3,222	-	4,692
	Child	-	-	1,823	2,132	369	4,324
Wave 11	Respondent	8,780	252	2,080	2,005	486	13,603
	Non-respondent	3,794	794	1,056	374	116	6,134
	Out-of-scope	1,395	112	109	3,643	-	5,259
	Child	-	-	1,542	2,415	357	4,314
Wave 12	Respondent	8,542	245	2,210	2,142	397	13,536
	Non-respondent	3,898	789	1,227	652	107	6,673
	Out-of-scope	1,529	124	111	4,080	-	5,844
	Child	-	-	1,239	2,700	374	4,313
Wave 13	Respondent	8,301	238	2,359	2,300	411	13,609
	Non-respondent	4,007	798	1,358	688	139	6,990
	Out-of-scope	1,661	122	115	4,483	-	6,381
	Child	-	-	955	2,981	394	4,330
Wave 14	Respondent	8,112	234	2,492	2,399	396	13,633
	Non-respondent	4,094	799	1,532	799	100	7,324
	Out-of-scope	1,763	125	137	4,907	-	6,932
	Child	-	-	626	3,291	324	4,241
	Total Wave 14	13,969	1,158	4,787	11,396	820	32,130

Table 8.28: Wave 11 to 14 person outcomes against wave 11 person outcomes, Top-Up Sample

		Wave 11			*New Entrants*		
		Resp.	*Non-resp.*	*Child*	*Earlier waves*	*Latest wave*	*Total*
Wave 12	Respondent	3,652	44	65	-	178	3,939
	Non-respondent	303	223	10	-	43	579
	Out-of-scope	54	6	6	-	-	66
	Child	-	-	1,099	-	91	1,190
Wave 13	Respondent	3,419	49	129	111	184	3,892
	Non-respondent	492	214	25	31	45	807
	Out-of-scope	98	10	18	88	-	214
	Child	-	-	1,008	82	115	1,205
Wave 14	Respondent	3,274	56	195	205	149	3,879
	Non-respondent	586	202	34	53	27	902
	Out-of-scope	149	15	25	220	-	409
	Child	-	-	926	178	86	1,190
	Total Wave 14	4,009	273	1,180	656	262	6,380

Table 8.30 shows the response rates for the Self Completion questionnaire, calculated as the percentage of respondents to which an SCQ could be matched.[40]

[40]The Wave 2 SCQ response rate jumped from 89.2 per cent in prior data releases to 93.0 per cent in Release 8. A review of the SCQ processing files in all waves was undertaken in 2009 and this lead to the identification of a batch of nearly 500 forms that were not included in the final data file in Wave 2. These have now been included from Release 8.

Table 8.29: Individual response rates for the HILDA Survey, waves 2 - 14 compared

	Main Sample													*Top-Up Sample*		
Wave	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*12*	*13*	*14*
All people																
Previous wave respondent	86.9	90.4	91.6	94.4	94.9	94.7	95.2	96.3	96.4	96.5	96.2	96.4	96.5	92.3	92.7	94.5
Previous wave non-respondent	19.8	17.7	12.8	14.9	8.5	5.7	5.8	8.7	4.7	3.9	3.6	3.9	3.5	16.5	13.9	14.8
Previous wave child	80.4	71.5	70.7	76.0	76.0	70.8	73.5	73.7	72.1	70.0	65.9	65.0	63.2	86.7	85.0	85.9
New entrant this wave	73.3	76.1	70.4	81.8	81.4	79.5	79.5	81.3	82.8	80.7	78.8	74.7	79.8	80.5	80.4	84.7
People attached to responding household in previous wave																
Previous wave respondent	86.9	90.4	91.6	94.4	94.9	94.7	95.2	96.3	96.4	96.5	96.2	96.4	96.6	92.3	92.7	94.5
Previous wave non-respondent	19.8	19.9	17.8	25.4	18.3	13.3	15.0	26.0	16.2	15.4	11.0	11.3	13.6	16.5	11.0	13.5
Previous wave child	80.4	82.1	81.2	88.6	89.8	90.5	90.9	93.0	92.3	93.0	89.0	89.5	90.5	86.7	91.6	97.1
New entrant this wave	73.3	78.4	71.6	85.2	81.5	80.0	81.0	81.3	83.5	82.0	79.2	77.0	79.8	80.5	80.4	86.5

Table 8.30: Self Completion Questionnaire response rate, wave 1 - 14

	Main Sample														*Top-Up Sample*			
Wave	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*11*	*12*	*13*	*14*
Face-to-face interviews	93.7	93.9	93.5	93.3	91.8	92.7	91.5	90.7	89.3	91.6	90.5	91.4	90.9	92.1	85.7	87.6	88.8	90.6
Phone interviews	52.7	63.3	68.1	68.2	62.3	64.1	62.2	59.7	63.0	62.8	59.6	61.4	59.3	59.7	56.2	50.0	48.6	49.3
Overall	93.5	93.0	92.3	91.9	89.9	90.8	89.0	87.6	86.9	89.1	87.8	88.7	88.1	89.2	85.2	85.9	86.6	88.4
Percentage of phone interviews	0.5	3.0	4.6	5.6	6.5	6.9	8.4	10.1	9.1	8.7	8.6	8.9	8.9	9.0	1.8	4.5	5.3	5.3

8.7 Attrition Bias

Attrition is generally only a serious concern when it is non-random (that is, when the persons that attrit from the panel have characteristics that are systematically different from those who remain). Table 8.31 provides figures on the percentage of wave 1 respondents who were re-interviewed in wave 14 disaggregated by various sample characteristics. For those persons interested in the balanced panel, the percentage of wave 1 respondents who have been interviewed in every wave is also provided. People who have died or moved overseas are excluded from these figures. These results indicate that the re-interview rate is lowest among people who were:

- relatively young (aged between 15 and 24 years);
- born in a non-English speaking country;
- of Aboriginal or Torres Strait Islander descent;
- single;
- unemployed; or
- working in low-skilled occupations.

The variation in attrition over the time is particularly marked with respect to age, country of birth, labour force and occupation.

The disparity in the re-interview rates for wave 1 respondents re-interviewed in wave 14 across the different characteristics is not as great as for those interviewed every wave. The most striking example of this is indigenous status – while only 40 per cent of the indigenous respondents in wave 1 have been re-interviewed every wave, 64.5 per cent were re-interviewed in wave 14. This indicates that the groups with low re-interview rates in the balanced panel are still engaged with the study.

Overall, attrition is not random. While we can make adjustments for the attrition through the sample weights, these adjustments are only as good as our ability to measure differential attrition.

The attrition rates are discussed at length in Watson and Wooden (2004b and 2009).

Table 8.31: Percentage of wave 1 respondents re-interviewed by selected sample characteristics

Wave 1 characteristics	*In all waves (%)*	*In Wave 14(%)*	*Wave 1 characteristics*	*In all waves (%)*	*In Wave 14 (%)*
Area			**Indigenous Status**		
Sydney	52.5	64.4	Indigenous	40.6	64.5
Rest of New South Wales	57.2	67.9	Non-Indigenous	55.6	66.5
Melbourne	54.0	67.1	**Education attainment**		
Rest of Victoria	53.7	64.5	Year 11 or below	50.7	62.6
Brisbane	59.5	67.8	Year 12	52.9	64.8
Rest of Queensland	56.2	65.7	Certificate	54.5	66.1
Adelaide	58.5	69.0	Diploma	62.1	71.2
Rest of South Australia	53.8	68.5	Degree or higher	65.6	74.9
Perth	53.9	62.8	**Dwelling type**		
Rest of Western Australia	49.9	64.4	House	55.6	66.8
Tasmania	57.0	69.0	Semi-detached	56.3	67.4
Northern Territory	69.8	83.1	Flat, unit, apartment	51.4	62.0
Australian Capital Territory	60.1	72.2	Other	53.9	66.0
Sex			**Labour force status**		
Male	53.7	65.3	Employed full-time	55.6	66.7
Female	56.7	67.5	Employed part-time	57.7	68.7
Age group (years)			Unemployed	43.9	56.1
15–19	38.5	56.7	Not in the labour force	55.0	66.2
20–24	43.0	59.0	**Employment status in main job**[1]		
25–34	51.5	64.4	Employee	56.2	67.4
35–44	57.5	67.8	Employer	53.3	63.2
45–54	60.8	70.1	Own account worker	58.1	68.3
55–64	65.2	73.7	Contributing family worker	54.0	72.7
65–74	65.3	72.4	**Occupation**[1]		
75+	41.5	50.0	Managers/administrators	57.5	69.1
Marital status			Professionals	65.1	75.0
Married	58.8	68.2	Associate professionals	56.6	67.0
De facto	52.9	65.6	Tradespersons	49.4	62.7
Separated	55.9	68.2	Advanced clerical/service	54.5	63.4
Divorced	62.8	73.4	Intermediate clerical/sales/service	57.1	67.8
Widowed	63.7	70.6	Intermediate production/transport	51.7	60.8
Single	45.0	60.6	Elementary clerical/sales/service	53.9	66.7
Country of birth			Labourers	48.2	61.0
Australia	56.8	68.0			
Overseas			Total	55.3	66.5
Main English-speaking	59.1	67.7	Number responding	6547.0	8112.0
Other	44.0	57.5			

[1]Employed sub-sample only.

9 HILDA USER TRAINING

We are running an introductory training course '*Getting Started: Analysing HILDA with Stata*' on 17-19 February 2016. This 3-day hands-on training course is designed for people interested in using the HILDA Survey data but have not yet done so or have only used the data a little. It will be held in Canberra. For those who have not used Stata before, a half day *Introductory to Stata* will be held on the afternoon of 16 February.

For more information about this training course, including how to register, go to www.melbourneinstitute.com/hilda/training/default.html.

We may repeat this training course or run other training later in 2016. We will circulate details of these training opportunities to the HILDA email list and will post them to the HILDA website. (To subscribe to the HILDA email list, go to www.melbourneinstitute.com/hilda/hilda-l.html.)

The material for most past training courses can be downloaded from www.melbourneinstitute.com/hilda/training/past.html

Should you have a group of 10 to 15 people who are interested in using the HILDA Survey data or would like specialised training, we may be able to organise a training course for you. Please contact Nicole Watson to discuss your request (n.watson@unimelb.edu.au).

10 GETTING MORE INFORMATION

No doubt there will be questions this manual does not answer. There are a number of other ways to get more information about the HILDA Survey data:

- Go to the HILDA website – copies of all survey instruments and various discussion and technical papers can be viewed and downloaded. You will also find the order forms for the datasets along with a growing bibliography of research papers that use the HILDA Survey data.
- Check the Frequently Asked Questions (www.melbourneinstitute.com/hilda/doc/datafaq.html).
- Contact the HILDA team at the Melbourne Institute – if you have lost your password, or you have questions about the data files or variables email hilda-inquiries@unimelb.edu.au.
- Contact the HILDA team at DSS – if you have a query about getting access to the data, ensure you have read the details on the HILDA website about ordering the data (www.melbourneinstitute.com/hilda/data), and if your questions are not answered there, then email longitudinalsurveys@dss.gov.au.

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APPENDIX 1a: SUMMARY OF HILDA SURVEY CONTENT, WAVES 1 – 14

The following table provides a guide to topics covered in the HILDA Survey over time. If you are interested in which specific variables are available each wave, you should refer to the cross-wave index provided with the documentation on Release 14 of the HILDA DVD.

HOUSEHOLD FORM	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Sex [a]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Date of birth [a]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fraction of time spent living at address	X													
English language ability of household members	X													
Disabilities of household members	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marital status of household members	X													
Employment status of household members	X		X	X	X	X	X	X	X	X	X	X	X	X
Household relationships	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Entrants – reasons for, and date of, joining household		X	X	X	X	X	X	X	X	X	X	X	X	X
Movers – reasons for, and date of, leaving household		X	X	X	X	X	X	X	X	X	X	X	X	X

a Pre-printed from wave 2 onwards.

HOUSEHOLD QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Child Care														
Difficulties with child care[b] (12 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Care during school term time – hours and cost by type	X[c]	X	X	X	X	X	X	X	X	X	X	X	X	X
Care during school holidays – hours and cost by type	X[c]	X	X	X	X	X	X	X	X	X	X	X	X	X
Care for children not yet at school while working – hours and cost by type	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Care while not working – hours and cost by type[d]		X	X	X	X	X	X	X	X	X	X	X	X	X
Receipt of Child Care Benefit	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Receipt of Family Tax Benefit			X	X	X	X	X	X	X	X	X	X	X	X
Child health and health care														
Health									X				X	
Weight at birth									X				X	
Visits to medical practitioners									X				X	
Hospital visits									X				X	
Child education														
Type of school												X		
Fees paid												X		
Perceptions of school outcomes and experiences												X		
Likelihood of attending university												X		
Housing														
No. of bedrooms	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ownership status	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Landlord type	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rent payments	X	X	X	X	X	X	X	X	X	X	X	X	X	X

HOUSEHOLD QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Boarders	X	X	X	X	X	X	X	X	X	X	X	X	X	X
How housing provided if live rent free	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Notional rent (if live rent free)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dwelling type [e]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Condition of dwelling (interviewer assessed) [e]	X	X	X	X	X						X			
Housing Wealth														
Owner IDs and share owned		X				X				X				X
First home buyer	X	X												
Year home purchased		X				X				X				X
Purchase price of home		X				X				X				X
Current value of home	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Value of housing debt	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Value of housing loans repayments	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Year expect housing loan to be paid off	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Value of initial housing loans		X				X				X				X
Value of housing loan when last refinanced						X				X				X
Whether fixed or variable home loan														X
Financial institution with which have home loan														X
Whether used a mortgage broker														X
Type of loan contract										X				X
Time remaining on loan contract										X				X
Material Deprivation [special module]														X
Other Household Assets *[special module]*														
Value of other properties		X				X				X				X

HOUSEHOLD QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Value of equity investments		X				X				X				X
Value of trust funds		X				X				X				X
Value of children's bank accounts		X				X				X				X
Value of other cash-type investments		X				X				X				X
Value of business assets		X				X				X				X
Value of vehicles		X				X				X				X
Value of life insurance		X				X				X				X
Value of collectibles		X				X				X				X
Other Household Debts *[special module]*														
Value of business debt		X				X				X				X
Overdue household bills						X				X				X
Other														
Number of motor vehicles	X													
Weekly expenditure on groceries / food [f]	X		X	X	X						X	X	X	X
Weekly expenditure on meals out [f]	X		X	X	X						X	X	X	X
Adequacy of household income	X													
Total household income (bands)				X	X	X	X	X	X	X	X	X	X	X

b. One item added from wave 3 onwards.

c. In wave 1 all child care items related to employment-related child care, with questions restricted to households where all carers in household were employed.

d. Questions split by school-aged children and children not yet at school from wave 5 onwards.

e. Collected as part of the HF in wave 1 and wave 11 Top-Up.

f. These expenditure items are collected in the SCQ from wave 6 -10.

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Country of birth & language														
Country of birth	X			X										
Year of arrival	X			X										

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
English as first language	X													
Aboriginality	X													
Australian citizenship				X										X
Permanent residence				X										X
NZ citizen prior to arrival				X										
Refugee				X										
Visa category [recent arrivals only]				X										
Family background														
Lived with parents at 14	X													
Why not living with parents	X													
Parents ever separated / divorce	X													
Age at time of separation	X													
Age left home	X													
Siblings	X													
Whether eldest sibling or not	X													
Father's / mother's country of birth	X													
Father's / mother's occupation	X													
Father's unemployment experience	X													
Father's education					X									
Mother's education					X									
Education														
Study status	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Year left school	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Type of school last attended	X	X	X	X	X	X	X	X	X	X	X	X	X	X

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Qualifications studying for		X	X	X	X	X	X	X	X	X	X	X	X	X
Qualifications completed	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Date completed qualification		X	X	X	X	X	X	X	X	X	X	X	X	X
Country in which completed qualification	X	X	X	X	X	X	X	X	X	X	X	X	X	X
State or territory in which completed school												X		
Type of institution at which obtained highest post-school qualification												X		
University at which obtained highest tertiary qualification												X		
Field of study of highest post-school qualification												X		
Persons still at school: truancy, suspension and bullying												X		
Employment history & status														
Years since left FT education	X													
Years in paid work	X													
Years unemployed	X													
Years out of labour force	X													
Main activity when not in labour force	X													
Employment status – ABS definition (9 questions)[9]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Current employment														
Usual weekly hours of work – all jobs	X	X	X	X	X	X	X	X	X	X	X	X	X	X

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Preferred weekly hours of work – all jobs	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reasons for working part-time hours	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Multiple job holding	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Usual weekly hours of work – main job	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Days of the week worked [h]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shift-work	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupation	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Occupation change		X	X	X	X	X	X	X	X	X	X	X	X	X
Occupation experience	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Job tenure	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Industry	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Working at home (3 questions)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trade union membership	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Paid holiday leave	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Paid sick leave	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Employment contract type	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Method of pay determination								X	X	X	X	X	X	X
Expectation of contract renewal	X													
Labour hire	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Expected quit probability	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Expected dismissal probability	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Expected probability of finding another job	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Work-related training [i]			X	X	X	X	X	X	X	X	X	X	X	X

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Independent contractor status								X	X	X	X	X	X	X
PAYE tax status	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Supervisory responsibilities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Employer type	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Workplace size	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Firm size	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Job satisfaction (6 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Job search while employed	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Intended age of retirement	X		X			X	X	X	X	X	X	X	X	X
Reason for ceasing last job		X	X	X	X	X	X	X	X	X	X	X	X	X
Characteristics of a previous job (5 items)		X	X	X	X	X	X	X	X	X	X	X	X	X
Persons not in paid employment														
Job search activity	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Looking for work – When began looking for work	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Looking for work – Hours spent in job search in last week		X	X	X	X	X	X	X	X	X	X	X	X	X
Looking for work – Intensive Assistance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Looking for work – Availability to start work	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Looking for work – Difficulties finding a job	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Looking for work – Number of job offers	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Not looking for work – Main activity	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Not looking for work – Preference to work	X	X	X	X	X	X	X	X	X	X	X	X	X	X

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Not looking for work – Reasons for not looking	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Not looking for work – Availability to start work	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reservation wage	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Desired hours of work	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Expected probability of finding a job	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reason for ceasing last job	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Characteristics of a previous job (5 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Work-related training						X	X	X	X	X	X	X	X	X
Whether retired	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Year / age retired	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Age plan to retire	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Job-related discrimination								X		X				X
Labour market calendar	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Leave taking					X	X	X	X	X	X	X	X	X	X
Mutual Obligation activity	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Income														
Current wage and salary income	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Current income from government benefits	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Salary sacrifice and non-cash benefits										X	X	X	X	X
Financial year income by source	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Australian Government Bonus Payments									X					
Credit card use and payment strategy	X	X	X	X	X	X	X	X	X	X	X	X	X	X

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Wealth [special module]														
Bank accounts		X				X				X				X
Credit card debt		X				X				X				X
Other debts		X				X				X				X
Superannuation		X				X				X				X
Home and property ownership history						X				X				X
Unpaid personal bills						X				X				X
Family formation														
Number of children	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Non-resident children characteristics	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Financial support for non-resident children	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Amount of contact with youngest non-resident child	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Employment status of other parent			X	X	X	X	X	X	X	X	X	X	X	X
Resident children characteristics	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Financial support from other parent	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Amount of contact other parent has with youngest child	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Employment status of other parent			X	X	X	X	X	X	X	X	X	X	X	X
Desire to have another child [j]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Likelihood of having another child [j]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Number of additional children intend to have [j]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Year intend to have next child [j]		X			X			X			X	X	X	X
Fertility [special module] [j]														

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Partner/self currently pregnant					X			X			X			
Time stopped/started work pre/post birth of baby					X			X			X			
Use of birth control					X			X			X			
Family support [special module]														
Grandchildren [j]					X			X			X			
Contact with non-resident adult children								X				X		
History and status of parents								X				X		
Contact with siblings								X						
Partnering / relationships														
Changes in marital status		X	X	X	X	X	X	X	X	X	X	X	X	X
Current marital status	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Current living circumstances		X	X	X	X	X	X	X	X	X	X	X	X	X
Single persons – Likelihood of marriage	X	X	X	X	X	X	X	X	X	X	X	X	X	X
De facto relationships – Year relationship started	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Number of other de facto relationships		X	X	X	X	X	X	X	X	X	X	X	X	X
Non co-residential relationships					X			X			X	X	X	X
Retirement [special module][j]			X				X				X			
Health / disability														
Whether has disability / health condition	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Type of disability			X	X	X	X	X	X	X	X	X	X	X	X
Whether disability commenced in last year	X	X		X	X	X	X	X	X	X	X	X	X	X
Year of onset of disability			X											

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Impact of disability on work (2 questions)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Difficulties as a result of disability (3 questions)				X					X				X	
Need for help / supervision (4 questions)				X					X				X	
Use of aids				X					X				X	
Home modifications				X					X				X	
Employment difficulties				X					X				X	
Education difficulties				X					X				X	
Health expectations									X				X	
Serious Illness conditions									X				X	
Childhood health									X				X	
Healthcare cards				X					X				X	
Private health insurance				X					X				X	
Private hospital cover				X					X				X	
Medical practitioner visits									X				X	
Hospital visits in past 12 months				X					X				X	
Caring for others					X	X	X	X	X	X	X	X	X	X
Whether respondent is a carer in household					X	X	X	X	X	X	X	X	X	X
Whether respondent is a carer outside household					X	X	X	X	X	X	X	X	X	X
Diet							X		X				X	
Smoking history							X							
Sleep quantity													X	
Youth [special module]				X										

PERSON QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Skills and abilities														
Self-assessed literacy and numeracy							X					X		
Languages spoken and read												X		
Use of computers												X		
Whether holds driver's licence												X		
Minimum education required to carry out job												X		
Cognitive ability tasks												X		
Other														
Life satisfaction (9 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Importance of life domains (8 items)	X													
Attitudes to life in Australia (3 items)	X													
English language speaking (2 questions)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Movers – Date moved to current address		X	X	X	X	X	X	X	X	X	X	X	X	X
Movers – Date left previous address			X	X	X	X	X	X	X	X	X	X	X	X
Movers – Reasons for moving		X	X	X	X	X	X	X	X	X	X	X	X	X
Intentions / plans for next 3 years [j]														
Move house					X			X			X			
Where move					X			X			X			
Stop/start studying					X			X			X			
Change Employment					X			X			X			

g. In wave 1 a shorter series of questions was used.

h. From wave 4 onwards, an additional sub-question was included to better enable weekend workers to be identified.

i. Extended from 3 items in waves 3 to 6 to 8 questions from wave 7.

j. Special modules were not asked in the Wave 11 Top-Up NPQ.

SELF-COMPLETION QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Health / Lifestyle / Living Situation														
Health and well-being – SF36 (36 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Psychological distress (Kessler 10)							X		X		X		X	
Serious health conditions (8 items) [k]			X				X		X				X	
Exercise (1 item)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Smoking incidence	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Smoking frequency		X	X	X	X	X	X	X	X	X	X	X	X	X
Tobacco expenditure [l]	X													
Alcohol consumption (2 items) [m]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Height / weight						X	X	X	X	X	X	X	X	X
Time stress (2 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dieting (2 items)							X		X				X	
Waist Measurement													X	
Sleep quality													X	
Perception of weight							X		X				X	
Satisfaction with weight							X		X				X	
Food consumption frequency (12 items)							X		X				X	
Preferences to live in area	X	X	X	X		X		X		X		X		X
Neighbourhood characteristics (10 items)	X	X	X	X		X		X		X		X		X
Attitudes about your neighbourhood						X				X				X
Housing adequacy (6 items)	X	X												
Satisfaction with family life (8 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Satisfaction with household division of labour (2 items)					X	X	X	X	X	X	X	X	X	X
Sexual identity												X		
Fairness of housework	X	X	X	X	X	X	X	X	X	X	X	X	X	X

SELF-COMPLETION QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Marital relationship quality (6 items)			X			X			X			X		
Membership of clubs etc.	X	X	X	X	X	X[n]	X	X	X	X	X	X	X	X
Internet access [o]										X				
Social interaction with friends etc.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Community participation (12 items)						X				X				X
Social support (10 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Achievement motivation (9 items)												X		
Cognitive activities												X		
Trust (2, 7,5 items)[p]					X	X		X		X	X			X
Personal control (7 items)			X	X			X				X			
Religion (3 questions)				X			X			X				X
Life events in past 12 months		X	X	X	X	X	X	X	X	X	X	X	X	X
Time use	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Responsibility for hh tasks (6 items)					X			X			X			X
Use of domestic help (2 items)					X			X			X			
Computer use and proficiency												X		
Finances														
Self-assessed prosperity	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stressful financial events (7 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Response to financial emergency (2 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Savings habits	X	X	X	X		X		X		X		X		X
Savings time horizon	X	X	X	X		X		X	X	X	X	X	X	X
Reasons for saving		X				X								
Risk preference	X	X	X	X		X		X		X	X	X	X	X
Attitudes to borrowing (5 items)	X	X												

SELF-COMPLETION QUESTIONNAIRE	*Wave*													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Intra-household decision-making [q]		X	X	X	X	X	X	X	X	X	X	X	X	X
Household expenditure [r]					X	X	X	X	X	X	X	X	X	X
Employment														
Job characteristics [s]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Family friendly workplace (3 items)	X													
Access to family friendly benefits (7 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Parenting														
Parenting stress (4 items)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fairness of child care	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Work family gains and strains [s]	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Other														
Attitudes about work and gender roles [s]	X				X			X			X			
Attitudes to marriage/ children (10 items)					X			X			X			
Benefits of employment (14 items)					X									
Personality (36 items)					X				X				X	
Willingness to take risks														X
Sex		X	X	X	X	X	X	X	X	X	X	X	X	X
Age group		X	X	X	X	X	X	X	X	X	X	X	X	X

k. This question comprised 8 items in wave 3. This was expended to 10 items from wave 7.

l. From wave 5, tobacco expenditure is measured as part of household expenditure, but on a household basis rather than an individual basis.

m. Every year 2 questions about frequency of drinking and amount drunk on a day when alcohol is consumed are asked. An additional item on the incidence of 'excessive drinking' was included in wave 7.

n. Additional question on the number of clubs a member of asked in this wave.

o. This item moved to the PQ in wave 11.

p. 7-item version included in wave 6.

q. List of 3 items expanded to 7 items for wave 5.

r. List of items expanded to include consumer durables from wave 6. Annual expenditure items were reduced to 8 items in wave 11.

s. List of items changed and extended in wave 5.

APPENDIX 1b: Survey Instrument Development and Sources

The following provides a summary of the origin behind many of the questions and data items included in the instruments for the HILDA Survey. If an item is not listed it can be assumed that the question was either a generic item (such as the date of birth or sex of an individual) or was developed specifically for the HILDA Survey with no, or minimal, reference to previous survey instruments. All references to question numbers below are for the wave (as indicated) in which the question was *first* administered.

HOUSEHOLD FORM

The HF essentially comprises three components:

(i) a record of calls made and outcomes;

(ii) a household grid; and

(iii) questions about all dwellings and refusal information.

The Household Grid was largely inspired by the Household Grid concept used in the BHPS and in the family composition section (Section A) of the Canadian Survey of Financial Security.

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W1: X5a/b	Fraction of time spent living at address	Based on question B7 in the FaCS General Customer Survey (GCS), 2000.
W1: X6a	English language use at home	Based on question asked in the ABS, Population Census.
W1: X6b	English language speaking ability	Response categories identical to those used in the ABS, Population Census.
W1: X7	Long-term disability / chronic health condition	Concepts underlying this question (and the accompanying showcard) based on questions asked in the FaCS GCS and in the ABS Survey of Training and Education.
W1: X12	Intra-household relationships	Many other surveys (e.g., the British Household Panel Survey [BHPS] and the US Panel Study of Income Dynamics [PSID]) ask how each household member is related to a specific reference person in the household. The HILDA Survey, however, may well be the first survey of its type to directly code the relationships between all household members.
W1: Y1	Type of residence	Categories based on ABS, Survey of Income and Housing Costs. The question was moved into the HQ in wave 2.
W1: Y3	Security features of premises	Adapted from US National Survey of Health and Stress (see Groves and Couper 1998, p. 75).

HOUSEHOLD QUESTIONNAIRE

Each year the HQ comprises three main sections, covering:

(i) child care arrangements;

(ii) housing and housing mortgages; and

(iii) other miscellaneous household characteristics.

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
CHILD CARE		
W1: Q4	Problems or difficulties with child care arrangements	Adapted from a comparable question included in the Negotiating the Life Course Study.
W1: Q7 / Q8 / Q10	Type, cost and hours of child care	The structure used is unique to the HILDA Survey, but the types of care identified draw heavily from the Negotiating the Life Course Study. The question sequence was substantially modified in wave 2. In wave 1 the scope of questions was restricted to households where all of the carers were in paid employment and only related to employment-related care. In wave 2 the restriction to persons in paid employment was removed and employment-related care and non-employment-related care separately distinguished. Further changes to the layout of the questions for non-employment related care were introduced in wave 5.
CHILD HEALTH (Every fourth wave from wave 9)		
The health-related questions include a range of questions in the HQ, PQ and SCQ. The HQ contained information on children in the household under 15 years of age. Most of the questions are analogous to questions asked in the PQ.		
W9: Q17	General health of each child	Based on questions contained in the Longitudinal Study of Australian Children and PSID Child Development Supplement.
W9: Q18	Birth-weight of each child	PSID Child Development Supplement.
W9: Q19-Q26	Dentist, doctor and hospital visits of each child	Same sources as corresponding PQ questions. See PQ sources for details.
CHILD EDUCATION (Every fourth wave from wave 12)		
The education-related questions include a range of questions in the HQ and PQ. The HQ contains information on children in the household under 15 years of age.		
W12: Q26	Subjective assessment of quality of child's education.	DEST Parent Survey 2007
W12: Q27	Subjective assessment of child's overall achievement at school	Based on LSAC Wave 5
W12: Q28	Whether child has been bullied at school	Based on LSAC Wave 5

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W12: Q29	Whether been contacted by school because of poor behaviour by child	Based on LSAC Wave 5
W12: Q30	Opinion on whether child will go to university	Based on BHPS 2009
HOUSING		
W1: R1	Number of bedrooms	Based on questions included in the ABS 1999 Survey of Living Standards pilot (q. D4) and in the BHPS (q. H1a, wave 1, HQ).
W1: R2	Residence ownership status	Adapted from a question included in the ABS Population Census.
W1: R3	Landlord type	Adapted from a question included in the ABS Population Census.
W1: R4	Rent	Based on q. D9 and q. D10, ABS 1999 Survey of Living Standards pilot.
W1: R10	Value of residence	Adapted from questions asked in the PSID and the BHPS.
OTHER		
W1: R27-R29	Household expenditure on groceries and meals out	Questions on expenditure on food and groceries and on meals out are asked each year in the BHPS. The question format, however, is markedly different (e.g., food is not separated from other groceries, use of banded response options, data on meals out are collected from individuals rather than households).
W1: R30	Subjective income adequacy	European Community Household Panel Study.
W2: Y1	Dwelling type	Categories based on ABS, Survey of Income and Housing Costs. In wave 1 this item was included as part of the HF.
W14: V1-V3	Material deprivation	This sequence was based on a proposal from Peter Saunders (UNSW), which turn was based on survey research undertaken at the Social Policy Research (see Saunders & Naidoo 2009; Saunders & Wong 2012).
HOUSEHOLD WEALTH (Every fourth wave from wave 2)		

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
The wealth module is split across the PQ and HQ. While the HILDA Survey questions are distinct, their development was informed by questions included in previous surveys, most notably the SCF, but also the PSID, BHPS and GSOEP. The questions were designed in collaboration with staff from the Reserve Bank of Australia. The household component covered housing and property, business assets and liabilities, equity-type investments (e.g., shares, managed funds) and cash-type investments (e.g., bonds, debentures), vehicles and collectibles (e.g., art works). In answering all questions, respondents were asked to provide exact dollar amounts. From wave 6 most questions were modified to enable those who were unsure of the value of the asset to select a pre-coded banded category. Wave 6 also saw the inclusion of additional questions on home loan refinancing, investment properties and unpaid overdue household bills. In wave 10, questions were added on whether mortgage loans have fixed or variable interest rates and the length of time remaining on mortgage loan contracts, and reverse mortgages were also identified for the first time. Data on the value of the primary residence are collected every wave.		

PERSON QUESTIONNAIRE

The PQ is administered to every person aged 15 years and over (on 30 June) in the household. There are two versions of the PQ: one for persons who have not previously responded (New Person Questionnaire) and for previous wave respondents (Continuing Person Questionnaire).

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
BIOGRAPHICAL HISTORY		
W1: A2	Year of arrival	Based on a question asked in the BHPS, but with the addition of the 6-month residency requirement.
W1: A3	English language	Adapted from ABS 1993 Survey of Training and Education.
W1: A4	Indigenous origin	Question text based on a comparable question in the Population Census. Response options are as used in the ABS Monthly Population Survey (i.e., the Labour Force Survey).
W1: B1	Parental presence at age 14	International Social Science Survey, Australia (IsssA) 1999.
W1: B2	Reason for not living with both own parents at age 14	Re-worded version of question asked in IsssA 1999.
W1: B3a	Parents ever separated / divorced	IsssA 1999.
W1: B3b	Parents ever reunited after separation / divorce	IsssA 1999.
W1: B7-B9	Siblings	Based on similar questions asked in the PSID and the 1998 SCF.
W1: B12	Employment status of father at age 14	Similar questions asked in both the BHPS and PSID.
W1: B13	Occupation of father	Basic approach to measuring occupation follows standard ABS practice.
W1: B15	Employment status of mother at age 14	Similar questions asked in both the BHPS and PSID.
W1: B16	Occupation of mother	Basic approach to measuring occupation follows standard ABS practice.
W1: C1	Age left school	Adapted from FaCS GCS.
W1: C2	Highest year of school completed	Revised version of question in ABS 1993 Survey of Training and Education. Showcard based on information provided in ABS, *How to Complete Your Census Form*, p. 10 (ABS, Canberra, 2001).
W1: C6	Post-school qualifications	Based on a question included in the ABS 1999 Living Standards Survey pilot.

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W1: C7a	Type and number of post-school qualifications	Response categories used are based on those used in various ABS surveys (e.g., the 1993 Survey of Training and Education and the 1999 Survey of Living Standards pilot). The list of categories, however, was extended to distinguish different levels of Certificate qualifications.
W1: C7c	Type of nursing qualification	Categories based on those used in the ABS 1999 Survey of Living Standards pilot.
W1: C7d	Type of teaching qualification	Categories based on those used in the ABS 1999 Survey of Living Standards pilot.
W1: D3a	Years in paid work	Modified version of a question included in the ABS Survey of Employment and Unemployment Patterns (SEUP).
W1: D3b	Years unemployed	Modified version of a question included in the ABS SEUP.
W1: D3c	Years not in labour force	Modified version of a question included in the ABS SEUP.
W1: D5	Main activity during years out of labour force	Modified version of a question included in the ABS SEUP.
W1:D12	Time since last worked for pay	Modified version of question asked in the ABS Monthly Population Survey.
W1: D13-D19	Characteristics of last job (persons not currently in paid work)	These items are essentially duplicates of questions listed below about characteristics of the current job.
W1: D20	Reason ceased last job	Based on questions asked in the ABS Monthly Population Survey, February 2000 (Labour Mobility supplement) and the Second Longitudinal Survey of Immigrants to Australia.
W1: J2	Marriage history grid	Based on AIFS Family Formation Project 1990.
W4: AA6-AA12	Visa category (for recent arrivals)	Designed in collaboration with officers from the Department of Immigration and Multicultural Affairs. The question sequence closely follows a similar sequence included in the ABS Monthly Population Survey, November 1999 (Characteristics of Migrants supplement).
EDUCATION STATUS		
W1: C10A	Current education enrolment	Based on a question included in the ABS 1999 Living Standards Survey pilot.
W1: C11a	Type of qualification being studied	Response categories used are based on those used in various ABS surveys (e.g., the 1993 Survey of Training and Education and the 1999 Survey of Living Standards pilot). The list of categories, however, was extended to distinguish different levels of Certificate qualifications.
W1: C11c	Type of nursing qualification being studied	Categories based on those used in the ABS 1999 Survey of Living Standards pilot.

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W1: C11d	Type of teaching qualification being studied	Categories based on those used in the ABS 1999 Survey of Living Standards pilot.
EMPLOYMENT STATUS		
W1: D6-D7	Employment status in last week	ABS Monthly Population Survey, with the concept of "last week" replaced by "the last 7 days".
W1: D8	Employment status – main job	ABS Monthly Population Survey (prior to changes introduced in April 2001).
W1: D9	Business incorporation	ABS Monthly Population Survey.
CURRENT EMPLOYMENT		
W1: E1	Hour worked per week – all jobs	ABS 1993 Survey of Training and Education. Question modified in wave 2 to better measure hours for persons with variable working hours.
W1: E5	Reason for working part-time	Modified version of a question asked in the Canadian Survey of Labour and Income Dynamics (SLID).
W1: E9	Hour worked per week – main job	ABS 1993 Survey of Training and Education. Question modified in wave 2 to better measure hours for persons with variable working hours.
W1: E10	Days of the week usually worked	ABS, Working Arrangements Survey (Supplement to the LFS).
W1: E11	Number of days usually worked in 4-week period	ABS, Working Arrangements Survey (Supplement to the LFS).
W1: E12	Shift work arrangements	SLID.
W1: E13	Occupation in main job	Based on standard ABS item.
W1: E14	Years in current occupation	Based on question included in ABS 1993 Survey of Training and Education
W1: E15	Current job tenure	ABS Monthly Population Survey, February 2000 (Labour Mobility module).
W1: E16	Industry	Based closely on standard ABS question (but unlike the ABS we do not precede this question with one asking respondents to nominate the name of the business that employs them).
W1: E22	Annual leave entitlements	ABS Monthly Population Survey, August 2000 (Employment Benefits module).
W1: E23	Paid sick leave entitlement	ABS Monthly Population Survey, August 2000 (Employment Benefits module).
W1: E24	Type of employer / business	Based loosely on question used in the 1995 Australian Workplace Industrial Relations Survey (AWIRS).
W1: E28	Likelihood of losing job in next 12 months	Wisconsin Survey of Economic Expectations (see Manski and Straub 2000).
W1: E29	Likelihood of finding replacement job	Wisconsin Survey of Economic Expectations (see Manski and Straub 2000).

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W1: E30	Likelihood of quitting job	Wisconsin Survey of Economic Expectations (see Manski and Straub 2000).
W1: E31	PAYE status	VandenHeuvel and Wooden (1995).
W1: E32	Supervisory responsibilities	BHPS / SLID.
W1: E33	Workplace size	Based on question asked in BHPS.
W1: E35	Firm size	ABS 1993 Survey of Training and Education. Response categories based on those provided in similar question asked of managers in the 1995 AWIRS.
W1: E36	Job satisfaction	Based on question in the BHPS, but with one item added and an 11-point scale used instead of a 7-point scale.
W1: E39	Intended retirement age	FaCS GCS.
W1: C27a-C27c	Work-related training	Adapted from suggestions by Alison Booth (ANU). Question sequence was expanded from Wave 7 on.
W5: C31b	Gender composition of workplace	Expanded version of question included in UN Generations and Gender Survey (GGS), wave 1 (q. 841).
PERSONS NOT IN PAID EMPLOYMENT		
W1: F1	Looking for work	Modified version of question in the ABS Monthly Population Survey.
W1: F3	When began looking for work	Modified version of question in ABS Monthly Population Survey.
W1: F5	Availability to start work (unemployed)	ABS Monthly Population Survey.
W1: F6 / F7	Reasons had trouble getting a job	Based on ABS Monthly Population Survey, July 2000 (Job Search Experience of Unemployed Persons module).
W1: F8	Number of job offers	ABS SEUP (Wave 2, q. S122).
W1: F10	Main activity since last worked or looked for work	Modified version of a question included in the ABS SEUP.
INCOME		
W1: G1-G33	Income	All of the income questions are taken directly from, or based on, the ABS Survey of Income and Housing Costs, 1999/2000. Changes to Government benefits subsequent to Wave 1 have been reflected in the relevant income questions.
W1: G34	Credit card ownership / payment strategy	Canadian Survey of Financial Security.
W10: F6-F12, F18-F23, F35-F41	Salary sacrifice and non-cash benefits	Adaptation of questions administered in the ABS Survey of Income and Housing Costs 2005-06

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
FAMILY FORMATION		
W1: H3	Non-resident child grid	Based on the AIFS Family Formation Project 1990 and the AIFS Australian Divorce Transitions Project 1997. The grid used in wave 1 (and hence in the NPQ) is slightly different from that used in the CPQ in subsequent waves. The grid was modified for wave 5 to explicitly identify deceased children (similar to what was done in the GGS).
W1: H5	Child support payments	AIFS Australian Divorce Transitions Project 1997.
W1: H15	Children with parent living elsewhere grid	Based on the AIFS Family Formation Project 1990 and the AIFS Australian Divorce Transitions Project 1997.
W1: H18	Child support received	AIFS Australian Divorce Transitions Project 1997.
W1: H26	Desire to have children	Modified version of question asked in the Negotiating the Life Course Study.
W1: H29	Intended number of children	Modified version of question asked in the National Survey of Families and Households.
W5: G28	Responsibility for child care tasks	GGS, wave 1, q. 201.
W5: G36a-G56	Pregnancy and fecundity	Most of the questions in this sequence are drawn directly from, or based on, questions included in the GGS, wave 1.
W5: G63	Factors influencing the decision to have a child	Adapted from a question asked in the 1987-88 National (US) Survey of Families and Households (and analysed in Schoen et al. 1997).
PARTNERING / RELATIONSHIPS		
W1: J4	Duration of current de facto relationship	Modified version of a question asked in the AIFS Life Course Study.
W1: J5	Likelihood of marriage	AIFS Life Course Study.
W1: J6	De facto relationships history	Based on a question asked in the National Survey of Families and Households.
W1: J7	Number of de facto relationships	National Survey of Families and Households.
W1: J8 / J9	Duration of first de facto relationship	Based on a question asked in the AIFS Life Course Study.
W5: H10-H19	Non co-residential relationships	Peter McDonald (ANU).
FAMILY SUPPORT		
W8: HP1-HP33	History and status of parents	Based on GGS, wave 1, q. 501-592.
PRIVATE HEALTH INSURANCE AND HOSPITAL VISITS		

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
Developed collaboratively with staff from the Centre for Health Economics Research Evaluation, University of Technology Sydney, and from the Melbourne Institute of Applied Economic and Social Research (Applied Microeconomics program).		
LIVING IN AUSTRALIA		
W1: K1	Current health status	SF-36 Health Survey (Ware et al. 2000).
W1: K2	Health condition or disability status	Question text comes from FaCS GSC. The list of activities used to define disability, however, comes from the ABS Survey of Training and Education.
W1: K3	Impact of disability or condition on work	A similar question is asked in many surveys, including the BHPS and the PSID.
W1: K4	How much condition limits work	Conceptually similar question questions asked in many surveys (e.g., the BHPS and the PSID), but do not employ the 11-point scale that is used here.
W1: K6-K7	Life satisfaction	The format of the question is based on one included in the GSOEP, but the content is largely driven by the work of Cummins (1996).
W1: K9	Views about life in Australia	ACNielsen
W1: K10	Date began living at current address	Combination of questions from the BHPS and the US SCF.
W1: K14	Reasons for moving in last year	Mostly based on a question included in the PSID, but extensively revised. Also draws on questions included in the BHPS and the ABS SEUP.
W4: K5-K13	Difficulties caused by disabilities	Most of the questions in this sequence are drawn directly from, or closely based on, questions included in the ABS 2002 General Social Survey (sequence 6.2).
W5: K5-K12	Caring	Most of the questions in this sequence are drawn directly from, or closely based on, questions included in the ABS 1998 Survey of Disability, Ageing and Caring (sequence 3.1).
W7: K23	Type of milk used	Slightly modified version of a question asked in the ABS 2004-05, National Health Survey (DIET_Q01).
W7: K24 / K25	Consumption of vegetables	K25 was adapted from ABS 2004/05 National Health Survey (DIET_Q02). Major difference is the exclusion of potato chips from the definition of vegetables. K24 was designed by the HILDA Survey team.
W7: K26 / K27	Consumption of fruit	K27 was adapted from ABS 2004/05 National Health Survey (DIET_Q03). K26 was designed by the HILDA Survey team.
W7: K28	Consumption of breakfast	Adapted from ABS 1995 National Nutrition Survey.
W7: K29	Use of salt as a food additive	ABS 2004-05 National Health Survey (DIET_Q05).
W7: K31 to K40	Smoking history	Based on questions included in the US 2006 National Health Interview Survey. Modified in collaboration with Dean Lillard, Cornell University.

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W13: K55-61	Physical Activity	International Physical Activity Questionnaire (IPAQ): short-form designed for telephone administration. The version implemented in the HILDA Survey, however, has been modified in a number of ways. These modifications are described in Wooden (2014b).
W13: K62-64d	Sleep quantity	Based on questions included in the UKHLS (Understanding Society) and the Wisconsin Sleep Cohort Study (Taheri et al. 2004).
HEALTH AND HEALTH CARE (Every fourth wave from wave 9)		
The health-related questions include a range of questions in the HQ, PQ and SCQ. The PQ component includes the above-mentioned questions on difficulties caused by disabilities, private health insurance and diet, as well as questions on health expectations, selected serious illness conditions, health as a child and health care utilisation. Many of the questions were the outcome of consultations with an expert group assembled by FaHCSIA.		
W9:K2-K4	Health expectations	Similar questions have appeared in the BHPS, HRS and ELSA.
W9:K19-K21	Serious illness conditions	In part based on questions administered in HRS.
W9: K22-K24	Health as a child	PSID 2007
W9: K31-K36	Doctor visits	Questions are based on similar questions in one or more of the Medical Expenditure Panel Survey (MEPS), the National Health Interview Study (NHIS), BHPS and the Australian Women's Health Survey (AWHS).
WEALTH (Every fourth wave from wave 2)		
As discussed earlier, while the HILDA Survey questions on wealth are unique, their development was informed by questions included in previous surveys, most notably the SCF, but also the PSID, BHPS and GSOEP (and designed in collaboration with staff from the Reserve Bank of Australia). The person component covered bank accounts, superannuation, credit cards, and personal debts. In wave 6 the key question on personal debt (W2: J27) was significantly expanded. Two new questions on outstanding personal bills were also added.		
RETIREMENT (Every fourth wave from wave 3)		
W3: L2a	Retirement status	US Health and Retirement Study (HRS), Wave 1.
W3: L4	Whether retirement voluntary or involuntary	HRS, Wave 1.
W3: L6a	Reason for retirement	English Longitudinal Survey of Ageing (ELSA). List of response options has been extended and modified.
W3: L18	Desired retirement age	Adapted from LaTrobe University, Healthy Retirement Project.
W3: L19-L20	Expected probability of working past age 65 / 75	Adapted from ELSA.
W3: L21	Influences on the decision to retire	WA Public Service Retirement Intentions Study (plus FaCS Work and Retirement Study).

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W3: L22	Expected sources of retirement income	FaCS Work and Retirement Study.
W3: L28	Expected changes in work hours	LaTrobe University, Healthy Retirement Project.
W3: L29	Expected financial situation in retirement.	LaTrobe University, Healthy Retirement Project.
W3: L41, L74	Reasons for changing employer	Based on question asked in FaCS Work and Retirement Study.
W3: L61	How life has changed since retirement	Adapted from questions asked in the National Survey of Families and Households.
W3: L62	Attitudes about life in retirement	LaTrobe University, Healthy Retirement Project (but with one additional item).
YOUTH ISSUES (Wave 4)		
W4: L12	Employment intentions at age 35	NLSY79.
W4: L13	Desired occupation at age 35	NLSY79.
W4: L17	Performance at school	Adapted from questions included in LSAY95.
EDUCATION (Every fourth wave from wave 12)		
W12: A22	Type of institution from which obtained highest educational qualification	Based on ABS Survey of Education and Training 2009
W12: A25	Field of study of highest educational qualification	Based on ABS Survey of Education and Training 2009
W12: A26-A29	Truancy, suspension and expulsion, and worry about bullying of persons still at school	Based on BHPS Youth Survey 2007
SKILLS AND ABILITIES[41] (Every fourth wave from wave 12)		
W7: K17	Self-assessed reading skills	Slightly modified version of a question included in the ABS 1996 Survey of Aspects of Literacy (q. 650)
W7: K18	Self-assessed mathematical skills	Slightly modified version of a question included in the ABS 1996 Survey of Aspects of Literacy (q. 656).
W7: K19	Attitudes to arithmetic and reading	Based on questions included in the ABS 2006 Adult Literacy and Lifestyle Survey.
W12: N11	Cognitive ability task: Backward digits span[42]	Generic test of working memory span, which features in many traditional intelligence tests, and most notably the Wechsler Adult Intelligence Scales.

[41] Questions on self-assessed literacy and numeracy were first included in wave 7 and were next included in wave 12 as part of the Skills and Abilities sequence..

[42] For further information about the three cognitive ability tasks, their development and their properties, see Wooden (2013).

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W12: N13	Cognitive ability task: Symbol-digits modalities	Smith (2007). The test is protected by copyright, which is owned by Western Psychological Services (WPS) in the US. Permission to use the test in wave 12 of the HILDA Survey was obtained from WPS.
W12: N17	Cognitive ability task: National Adult Reading Test	A 25-item version of the 50-item National Adult Reading Test (Nelson 1982).
INTENTIONS AND PLANS (Waves 5, 8 and 11)		
The question sequence here is based on a proposal designed by Peter McDonald (ANU).		
TRACKING		
W1: T4	Likelihood of moving in next 12 months	Adapted from question asked in the BHPS.
INTERVIEWER OBSERVATIONS		
W1: Z1	Presence of others during interview	BHPS.
W1: Z2	Influence exerted by others on respondent	BHPS.
W1: Z3	Understanding of questions	1998 SCF.
W1: Z4	Suspicion about study	1998 SCF.
W1: Z5	Frequency respondent referred to documentation	1998 SCF.
W1: Z6	Degree of cooperation	BHPS.
W1: Z7	Presence of problems	BHPS.

SELF-COMPLETION QUESTIONNAIRE

First Wave Qstn #	*Data item / Topic*	*Notes on origin / Source*
W1: A1-A11d	General health and well-being	SF-36 Health Survey (Ware et al. 2000). The Standard English (Australia / New Zealand) Version 1.0 is employed.
W7: B17	Psychological distress (Kessler 10)	Kessler *et al*. (2002), and, with some minor exceptions, as implemented in the ABS 2004/05 National Health Survey. The exceptions are that in the HILDA Survey, items 3 and 6 are administered to all respondents.
Wave 3: B18	Serious illness conditions	Developed by Melbourne Institute in consultation with health experts. Response options were changed from Wave 7.
W1: B1	Frequency of moderate / intensive physical activity	Based on a question used in the ABS 1995 National Health and Nutrition Survey. The wording of the two questions, however, is very different and, unlike the ABS survey, pre-coded categories are used.
W2:B2	Smoking frequency	Developed with advice from staff at the Australian Institute of Welfare (AIHW). In wave 1 a simpler version of this question (three response categories instead of five) was included.
W2: B3	Number of cigarettes smoked per week	Developed with advice from staff at the AIHW.
W1: B4	Frequency of alcohol consumption	Based on a question included in the AIHW 1998 National Drug Strategy Household Survey. The question was amended slightly in wave 2 to provide for one additional response category. The order of the response categories was also reversed, bringing it more in line with AIHW practice.
W1: B5	Daily consumption of alcohol when drinking	AIHW 1998 National Drug Strategy Household Survey (q. H14). The question was amended slightly in wave 2 to provide for one additional response category.
W7: B6	Frequency of 'risky' alcohol consumption	Based on a question included in the LSAC (Wave 1).
Wave 7: B16	Frequency of consumption of food types	Adapted from ABS 1995 National Nutrition Survey
W1: B6	Frequency of feeling pressed for time	ABS 1999 Survey of Living Standards pilot (q. L1).
W1: B7	Frequency of spare time	ABS 1999 Survey of Living Standards pilot (q. L3).
W1: B9	Neighbourhood characteristics	Based on a question occasionally used in the IsssA and the British Social Attitudes (BSA) Survey. Four items are taken directly from the BSA Survey, one is a modified version of a BSA item, three are direct from IsssA and two are new. Like the IsssA, a 5-point scale is used (the BSA uses a 4-point scale), but the bottom category has been relabelled and the lead-in question is different.

W6: B12	Neighbourhood characteristics	In wave 6 an additional battery of items seeking respondents' views about the neighbourhood was included. These new items were taken from Sampson et al. (1997).
W1: B10	Housing adequacy	Based on a question used in the Tasmanian Healthy Communities Survey (HCS). The HILDA question, however, only uses six items (not 11), one of which is not from the HCS. The categories are also labelled differently.
W1: B11	Satisfaction with family life	Taken from AIFS Australian Living Standards Study (Part 4, q. 103), but asked on an 11-point scale rather than a 9-point scale.
W1: B12	Perception of whether doing fair share of the housework	Negotiating the Life Course Study.
W1: B14	Frequency of social interaction	Based on a question asked in the Tasmanian HCS.
W1: B15	Social support	The first seven items come from Henderson et al. (1978), while the last three items are from Marshall and Barnett (1993).
W1: B16	Time use	Based loosely on a question included in the GSOEP. An extended version of the final question used was piloted as part of the IsssA 2000. In wave 2 two additional categories were added (for paid employment and looking after other people's children), and the response categories amended to seek both hours and part hours (i.e., minutes) data.
W2: B16	Life events	The list of life events was informed by the list originally used by Holmes and Rahe (1967) in their development of a stressful life events measure.
W3: B10	Personal Control	Pearlin and Schooler (1978).
W3: B20	Marital quality	Hendrick (1988). The Hendrick scale comprised 7-items – the 6 used here, as well as one item on satisfaction with relationship which HILDA asks every wave as part of its battery on satisfaction with relationships. Hendrick also labelled the mid-point on the scale whereas in the HILDA Survey only the extreme points are labelled.
W4: B18	Religious denomination	Pre-coded categories selected on the basis of the most frequent responses to the 2001 Census.
W5: B10	Satisfaction with division of household tasks	Adapted from two questions asked in the GGS (wave 1, q. 202 and q. 402).
W5: B16	Responsibility for household tasks	GGS (wave 1, q. 401). The list of response options was slightly extended in the HILDA Survey while one item ('organising joint social activities') was omitted.
W5: B17-B18	Use of domestic help	B17 came from GGS (wave 1, q. 404).
W5: B19	Personality traits	Closely based on measure developed by Saucier (1994). The final list of 36 items includes 30 items taken directly from Saucier's original list of 40.
W6: B6-B7	Height and weight	Generic questions, but format influenced by like questions included in the 1994 AYS.

W7: B13	Frequency of dieting	Adapted from the Australian Longitudinal Study on Women's Health.
W7: B14	Self-assessed weight	ABS 2004-05 National Health Survey (BDYMSS_Q01)
W12: B15	Sexual Identity	Adapted version of item recommended by the UK Office of National Statistics (see Haseldon & Joloza 2009).
W7: B16	Food frequency	This multi-part question is a very abbreviated form of food frequency questionnaire (FFQ). FFQs are asked in many surveys and include a widely different numbers of food groups. For HILDA, 10 of 21 major food groups were selected from the National Nutrition Survey 1995 and then modified. These categories were chosen on the basis of being able to elicit an indication of whether respondents are meeting the current Australian nutritional guidelines for consumption of each of the food groups listed.
W6: B21	Community participation	Helen Berry, National Centre for Epidemiology and Population Health, ANU.
W13: B27	Sleep quality	UKHLS (Understanding Society), but with a modified set of response options.
W1: C1	Financial well-being (self-assessed prosperity)	Tested as part of IsssA 2000 (q. 5, p. 84).
W1: C2	Stressful financial events	Based closely on ABS 1999 Survey of Living Standards pilot (q. H6).
W1: C3a	Ability to raise $2000 in an emergency	Inspired by ABS 1999 Survey of Living Standards pilot (q. H4). The ABS survey, however, did not seek to identify how difficult it would be to raise the money, only whether it was possible or not.
W1: C3b	Source of money in an emergency	Categories based on those used in Canadian Survey of Financial Security (q. L14).
W1: C4	Family's savings habits	1998 SCF (X3015-3020).
W1: C5	Savings time horizon	1998 SCF (X3008).
W1: C6	Risk preference	1998 SCF (X3014), but with addition of option: "I never have any spare cash". This question was substantially modified in wave 6.
W1: C7	Attitudes to borrowing	Based closely on 1998 SCF (X402-406).
W2: C9	Intra-household decision-making	The first version of this question included just three items and was developed with little external input. In wave 5 the question was modified to bring it more in line with the format of a like question included in the GGS (wave 1, q405). The list of items was thus increased to seven (four of which were taken directly from the GGS) and the number of response options expended.
W5: C5-C8	Household expenditure	This section was largely developed specifically for the HILDA Survey, but drawing in some small part on the evidence reported in Browning et al. (2003). The structure of the question set was significantly modified in wave 6.

W1: D1	Attitudes about work and gender roles	In wave 1 the question comprised 14 items drawn from Canadian GSS (a), created specifically for the HILDA Survey (b), Galinsky (1999) (c, d, h), adapted from Negotiating the Life Course Study (NLCS) (e, g, I, j), NLCS (f), adapted from PSID / NSFH (k, n) and adapted from Canadian GSS (l, m). In wave 5 two items from the original list of 14 were removed and five new items added. The new items were all drawn from the GGS (wave 1, q. 1113).
W5: D1	Trust	In wave 5 two items used in the GGS, but originally drawn from the World Values Survey were included. The questions were re-formatted using the standard 7-point agree / disagree scale which is widely used in the HILDA Survey SCQ. In wave 6 an additional five items were included. These items were suggested by Helen Berry (ANU) and are based on the Organisational Trust Inventory used in Berry and Rodgers (2003).
W5: D2	Attitudes about marriage and children	GGS (wave 1, q. 1107). For the HILDA Survey 7-point scales were used rather than the 5-point scale proposed in the GGS.
W5: D4	Perceived benefits of paid employment	Based on a proposal from FaCS.
W1: E1	Job characteristics	The 12-items used here, or variants of them, have been included in a great number of surveys about job characteristics. Four of the items, however, are taken directly from the IsssA. In wave 5 a further nine items were added. All of these items were drawn from the “PATH Through Life Project” (run by the Centre for Mental Health Research, ANU).
W1: E2	Family friendliness of workplace	Inspired by work of Marshall and Barnett (1993).
W1: F2	Parenting stress	PSID Child Development Supplement 1997, Primary Caregiver of Target Child – Household Questionnaire (q. A29).
W1: F3	Perception of whether doing fair share of the child care	Negotiating the Life Course Study.
W1: F4	Work-family gains and strains	Marshall and Barnett (1993). In wave 1 the question only included 12 of the 26 original items used by Marshall and Barnett. In wave 5 the list of items used was expanded to 16.
W12: B21	Achievement motivation	Modified version of 10-item question developed by Lang and Fries (2006)
W12: B22	Cognitive activities	Based on the Midlife in the United States National Study of Health and Wellbeing.
W12: B25	Computer use and proficiency	ABS 2006 Adult Literacy and Life Skills Survey.

APPENDIX 1c: List of acronyms used

ABS	Australian Bureau of Statistics
AIFS	Australian Institute of Family Studies
AIHW	Australian Institute of Health and Welfare
ANU	Australian National University
AWIRS	Australian Workplace Industrial Relations Survey
AYS	Australian Youth Survey
BHPS	British Household Panel Survey
BSA	British Social Attitudes
DSS	Department of Social Services
ELSA	English Longitudinal Survey of Ageing
FaCS	Family and Community Services (Department of)
FaHCSIA	Families, Housing, Community Services and Indigenous Affairs (Department of)
GCS	General Customer Survey
GGS	(UN) Generations and Gender Survey
GSOEP	German Socio-Economic Panel
HCS	Healthy Communities Survey
HILDA	Household, Income and Labour Dynamics in Australia
HRS	(US) Health and Retirement Study
IsssA	International Social Science Survey, Australia
LFS	Labour Force Survey
LSAC	Longitudinal Survey of Australian Children
LSAY	Longitudinal Surveys of Australian Youth
NLSY79	National Longitudinal Survey of Youth (1979 cohort)
NSFH	(US) National Survey of Families and Households
PSID	Panel Study of Income Dynamics
SCF	(US) Survey of Consumer Finances
SCQ	Self-Completion Questionnaire (HILDA)
SEUP	Survey of Employment and Unemployment Patterns
SLID	Survey of Labour and Income Dynamics

APPENDIX 2: Imputation methods used in the HILDA Survey

The following is an extract from HILDA Technical Paper 2/09 (Hayes and Watson, 2009).

The imputation methods used in the HILDA Survey, to varying extents, are:

- Nearest Neighbour Regression Method
- Little and Su Method
- Population Carryover Method
- Hotdeck Method

Most of these methods use the concept of donors and recipients. The record with missing information is called the 'recipient' (i.e., it needs to be imputed). The 'donor' has complete information that is used to impute the recipient's missing value. The methods differ in how a suitable donor is identified and used.

Nearest Neighbour Regression Method

The Nearest Neighbour Regression method (also known as predictive mean matching (Little, 1988)) seeks to identify the 'closest' donor to each record that needs to be imputed via the predicted values from a regression model for the variable to be imputed. The donor's reported value for the variable being imputed replaces the missing value of the recipient.

For each wave and for each variable imputed, log-linear regression models using information from the same wave were constructed. A backwards elimination process in SAS was used to identify the key variables for each variable and wave.

The predicted values from the regression model for the variable being imputed are used to identify the nearest case (donor *d*) whose reported value (Y_d) could be inserted into the case with the missing value ($\hat{Y}_i = Y_d$). Donor *d* has the closest predicted value to the respondent *i*, that is $|\hat{\mu}_i - \hat{\mu}_d| \leq |\hat{\mu}_i - \hat{\mu}_p|$ for all respondents *p* (potential donors) where $\hat{\mu}_i$ is the predicted mean of *Y* for individual *i* that needs to be imputed, and Y_d is the observed value of *Y* for respondent *d*.

For some variables, an additional restriction may also be applied to ensure that the donor and recipient match on some broad characteristic (such as age group).

Little and Su Method

The imputation method proposed by Little and Su (1989) incorporates (via a multiplicative model) the trend across waves (column effect), the recipient's departure from the trend in the waves where the income component has been reported (row effect), and a residual effect donated from another respondent with

complete income information for that component (residual effect). The model is of the form

imputation = (roweffect) (columneffect) (residualeffect) .

The column (wave) effects are calculated by $c_j = \frac{\bar{Y}_j}{\bar{Y}}$ where $\bar{Y} = \frac{1}{m}\sum_j \bar{Y}_j$ for each wave *j* = 1, …, *m*. $\bar{Y}_j$ is the sample mean of variable *Y* for wave *j*, based on complete cases and *Y* is the global mean of variable *Y* based on complete cases.

The row (person) effects are calculated by $\bar{Y}^{(i)} = \frac{1}{m}\sum_j \frac{Y_{ij}}{c_j}$ for both complete and incomplete cases. Here, the summation is over recorded waves for case *i*; m_i is the number of recorded waves; Y_{ij} is the variable of interest for case *i*, wave *j*; and c_j is the simple wave correction from the column effect.

The cases are ordered by $\bar{Y}^{(i)}$, and incomplete case *i* is matched to the closest complete case, say *d*.

The missing value Y_{ij} is imputed by

$$\hat{Y}_{ij} = \left(\bar{Y}^{(i)}\right)\left(c_j\right)\left(\frac{Y_{dj}}{\bar{Y}^{(d)} c_j}\right) = Y_{dj}\frac{\bar{Y}^{(i)}}{\bar{Y}^{(d)}}$$

where the three terms in brackets represent the row, column, and residual effects. The first two terms estimate the predicted mean, and the last term is the stochastic component of the imputation from the matched case. A worked example of the Little and Su method is provided in Appendix 1 of Hayes and Watson (2009).

It is important to note that due to the multiplicative nature of the Little and Su method, a zero individual effect will result in a zero imputed value (Starick and Watson, 2007). However, it is quite valid to have an individual reporting zero income in previous waves and then report that they have income but either don't know its value or refuse to provide it. The individual's effect would be zero and any imputed amount via the Little and Su method would also be zero, which we know is not true. Therefore, recipients with zero individual effects are not imputed via the Little and Su method. An additional restriction for this method is that donors must have a non-zero row effect to avoid divisions by zero.

Population Carryover Method

A carryover imputation method imputes missing wave data by utilizing responding information for that case from surrounding waves. Rather than randomly assigning either the preceding wave response or the following wave response, the probability

of choosing one or the other of these responses is chosen to reflect the changes in the reported amounts between waves observed in the population. This is known as the 'population carryover method' (Williams and Bailey, 1996).

The probability that a value is carried forwards or backwards is calculated in the following way. An indicator variable is created which equals 1 when the reported change between waves *j* and *j+1* is smaller than the reported change between waves *j* and *j-1* for the complete cases; and 0 otherwise. The proportion *p* of the interviewed sample where the change between waves *j* and *j+1* is smaller than the change between waves *j* and *j-1* is then determined. The next value is carried backwards with probability *p* and the last value is carried forwards with probability *1-p*, reflecting the probabilities associated with the occurrence of change between waves found in the complete cases.

Within the context of the HILDA Survey, the Population Carryover method is only used for the identification of zero or non-zero amounts. Where the value is deemed to be non-zero, another imputation is used to impute a non-zero amount.

Hotdeck Method

The hotdeck method randomly matches suitable donors to recipients within imputation classes. The donor's reported value for the variable being imputed replaces the missing value of the recipient.

A number of categorical variables are used to define imputation classes for the variable to be imputed. These variables are assigned an order of priority and when there are not a sufficient number of donors within a class, the imputation classes are sequentially folded back, removing the least important class variable first until a suitable donor is found. When more than one donor can be matched to a recipient *i* within an imputation class *c*, a donor *d* is selected randomly (the class of the donor and the recipient are the same, that is, $c_i = c_d$). The donor's reported value is inserted into the recipient's missing value $\hat{Y}_i = Y_d$. A hotdeck macro (hesimput), written by the Statistical Services Branch of the Australian Bureau of Statistics, was used to run this method for the HILDA Survey.